

## Batten down the hatches on the LAN

Security is more complicated in the client/server age, and just as critical. **See page 50**

## Software to beat the fax paper chase

We look at six products that let your PC send, receive, and manage faxes. **See page 58**

AUGUST 22, 1994

THE VOICE OF PERSONAL COMPUTING IN THE ENTERPRISE

VOLUME 16, ISSUE 34

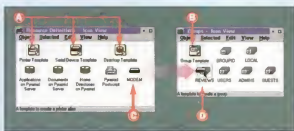
First Look / Nicholas Petreley

## IBM cleans up LAN Server's act

Version 4.0 is poised to gain broader appeal

IBM's LAN Server 4.0, due to be released sometime in the fourth quarter of 1994, takes a seasoned network operating system out of the dark ages and into the future. With the addition of its object-oriented administration tools, peer-to-peer services, native TCP/IP support, performance enhancements, and a long list of other much-needed improvements, LAN Server should gain a broader appeal in the enterprise.

LAN Server used to rank among the most cryptic and inflexible of the network operating systems. Take the older LAN Server 3.0 installation program, please! It was anything but intuitive, and it supported only a paltry handful of network cards.



You can define resources for your users by tearing off (dragging and dropping) templates from these pads. You create users the same way. Drag the modem icon to the REVIEWS group, check the desired settings, and give the "Reviews" users access to the modem when they log in.

The new LAN Server 4.0 installation program is much improved and includes an easy-install option that comes close to providing one-button installation. It will try to sniff out your installed network cards and auto-configure them. The

beta version I tested recognized my SMC Elite16 and configured it properly on the server but not on the client. IBM plans to support 70 percent of industry-standard Ethernet cards and 90 percent of Token

**See FIRST LOOK, page 100**

## As AppWare ship date nears, support wanes

By SCOTT MACE

A year after Novell Inc. orchestrated the introduction of AppWare, the company will strike up the band again for the official shipment next week of the cross-platform development environment.

But it appears not many ISVs will come to the dance.

Novell is hoping AppWare's three parts — Visual AppBuilder, AppWare Foundation, and AppWare Loadable Modules — designed to develop cross-platform, network-ready applications, will attract a

lot of developers.

But it appears to be having a hard time holding on even to early adopters. Some AppWare partners who stood on stage with Novell at the original rollout are now betting on Microsoft Corp.'s Windows API set.

For instance, Powersoft Corp. will announce this week its decision to use the Windows API set, including OLE 2.0, as a basis for all cross-platform development, and to use other third-party migration tools to port to other platforms, accord-

**See APPWARE, page 98**

## 'Lite' version of Notes to be less filling

By DOUG VAN KIRK

Lotus Development Corp. is reading a slimmed-down version of its groupware software with a street price of \$99, which could be announced as early as next month, said sources close to the project last week.

But companies looking to add to their existing installed base may not be able to take advantage of the product, dubbed Notes Express.

Notes Express will include many, but not all, of the features of the Notes client and serve as a run-time platform for third-party applications that provide interfaces to Notes data. The Cambridge, Mass.-based company, however, will continue to sell the existing Notes client at \$495.

While the lower price could entice companies not using

**See NOTES, page 98**

## NetWare 4.1 beta aims to fill enterprise gaps

Users hail better directory services

By VANCE MCCARTHY

After more than six months of preparation, Novell Inc. last week released NetWare 4.1 into beta testing, and early users said it may be the real deal.

For Novell, this is a crucial upgrade in its enterprise push, as many users, developers, and analysts expect NetWare 4.1 to get the needed support and tools to become a mission-critical platform. Novell promises

to ship NetWare 4.1 by year's end; officials would not commit to a price.

As expected, the upgrade includes a more flexible and easier-to-use NetWare Directory Services (NDS); the capability to manage NetWare 3 binderies directly from NetWare 4; and graphical directory tools that finally let users modify their directories to match changes in their organizations. Novell also released SFT III for

**See NETWARE, page 98**

## Compaq adds PCI to servers, networking features to PCs

By BOB FRANCIS

Enhanced networking will be a prime focus of Compaq Computer Corp. in early 1995 as the company adds PCI support to its TriFlex server architecture and provides network management software on its Desktop PCs.

Compaq is also teaming up with Texas Instruments Inc. to develop 100Mb-per-second Ethernet cards, which should

be available next year, sources said last week. TI and Compaq plan to announce the joint effort in the next few weeks.

On the bus front, sources said PCI slots will be added to the company's servers sometime early next year, a move the company acknowledged was coming, although Compaq declined to say when it will add PCI to Compaq's server line.

Gary Stimac, senior vice

**See COMPAQ, page 98**

## Compaq compacts prices

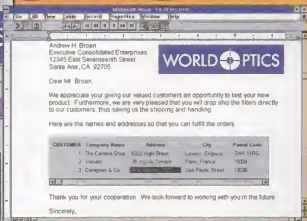
Desktop system prices will drop in time for a fall rollout of new models

Desktop line	Processor	Hard drive	Old price	New price
XL 560	60-MHz Pentium	270MB	\$3,299	\$2,999
XE 466	486DX2/66	270MB	\$2,299	\$1,949
ProLine line				
MT 450	486DX2/66	340MB	\$1,749	\$1,499
Contura portables				
Aero 4/33C	33-MHz 486SX	170MB	\$2,095	\$1,799
4/25c	25-MHz 486SX	120MB	\$2,149	\$1,999

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End-user Features	Paradox 5.0	Access 9.5
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Integrated graphics	✓	
Built-in worksheet and mail capabilities	✓	
Quick Filter without Query Process	✓	
Poweruser Developer Features:		
OLE 2.0 client and server support	✓	
Compatibility with applications from previous version	✓	
Transparent connectivity and scalability with database engines	✓	
Record-level locking	✓	
Graphical integrated Development Environment (IDE)	✓	
ODBC-compliant	✓	
Dedicated high-performance native SQL drivers	✓	

queries faster. And for Paradox developers, there's a new Integrated Development Environment and more than 300 new ObjectPAL™ Methods and Properties that help you develop Windows applications in record time. Plus, with the new native SQL drivers, Paradox is ready when you are to upsize your applications to the Client/Server environment.

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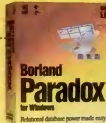
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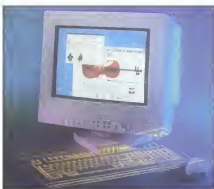
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## AT DEADLINE

# Make Systems, IBM to codevelop network tools

Network management vendor Make Systems Inc. will announce next week a product development agreement with IBM aimed at giving users tools to design, manage, and optimize high-capacity networks that use IBM's NWay family of Asynchronous Transfer Mode (ATM) switches, said sources close to the agreement. Make's NetMaker XA line of design and management tools—which can be bought separately or in groups—can also perform failure analysis. The package will be ready by year's end.

—Bob Wallace

## StrataCom device will link WAN sites

StrataCom Inc. is developing a device that will enable users to establish on-demand links between different sites on their WANs. This switched virtual circuits (SVC) technology will be available for frame-relay and ATM service in mid-1995, company officials said. SVC is important because today's frame relay requires users to establish permanent links, akin to private lines, which can be expensive and inflexible. AT&T, CompuServe Inc., and WiTel will support SVCs, as will Cisco Systems Inc., Wellfleet Communications Inc., 3Com Corp., SynOptics Communications Inc., Combinet Inc., and Shiva Corp.

—Bob Wallace

## Cylink to introduce wireless modem

Wireless network vendor Cylink Corp. will next month introduce a new version of AirLink, a wireless modem Cylink said will support full 10Mbps Ethernet connections. According to Cylink, AirLink will be capable of maintaining full-speed connections at distances up to 13 miles when used with a directional antenna in line-of-sight links. At reduced speeds, connections can be established over distances as great as 30 miles. AirLink uses spread-spectrum modulation, which enhances security and reduces susceptibility to interference and operates in an unlicensed frequency spectrum.

—Doug van Kirk

**BRIEFLY NOTED:** AT&T and Intel Corp. this week will announce plans to make Intel's ProShare conferencing package work with AT&T's WorldWork point-to-point conferencing system...**Digital Equipment Corp.** last week announced that its semiconductor business unit will now be called Digital Semiconductor...**SAP America Inc.** will announce this week that it will port its R/3 suite of client applications to Windows NT. The R/3 suite, which is especially popular in Europe, includes financial, human resources, and manufacturing modules...**IBM** is reabsorbing its wholly owned subsidiary Metaphor. IBM will continue to support customers for Metaphor's Data Interpretation System but plans no future upgrades. Most of Metaphor's 290 employees will be laid off by the end of the year...**U.S. Robotics Inc.** will ship this week a high-speed modem that complies with the ITU-T (International Telecommunications Union) V.34 standard for sending and receiving data at 28.8Kbps. Both the external and internal versions of the Courier V. Everything modem (the external is priced at \$595 and the internal is \$545) include backward compatibility with lower speed modems...**Verity Inc.** and **Action Technologies Inc.** have teamed up to develop an end market software to link Verity's Topic information agent engine to Action's workflow and business process automation software. The software is available now under the name Team Action...**Versant Object Technology Inc.** is readying a set of object-oriented development tools for release this fall. Versant Argos is a Smalltalk toolset for use with the company's Versant object database. Versant announced the toolset from Miramar (Object-Oriented Programming Systems, Languages, and Applications) conference in Portland, Ore., in October...**Digital Communications Associates Inc.**, in Alpharetta, Ga., will announce this week a communications middleware development tool called QuickPeer. The tool is designed to help developers create on-line applications for several communications protocols, including TCP/IP.



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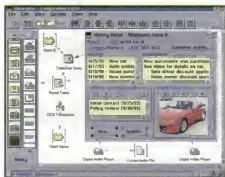
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## NEWS

# Marvel to be announced in fall

## Microsoft's on-line service to offer access to Internet

BY KAREN RODRIGUEZ

Microsoft Corp. is moving onto the information superhighway by giving Chicago users instant access to the Internet and other on-line services.

The project, code-named *Marvel*, is expected to be announced at the end of October, said Bill Miller, product manager for on-line services with the advanced technology division at Microsoft.

When Chicago ships in the first half of 1995, users will get out-of-the-box connectivity to Point-to-Point Protocol (PPP) for access to the Internet; telephone functions via telephony API (TAPI) for fax and phone integration to the PC; and an improved TCP/IP stack to automatically configure Internet Protocol (IP) addresses.

"We want to make Chicago a great Internet client and make NT a great Internet server," said Jay Allard, program manager for Internet technologies, with Microsoft's business systems division.

Despite Microsoft's commit-

ment to offer a wide range of on-line services, the initial release of *Marvel* in Chicago will let users access only a World Wide Web server with information about Microsoft, its products, technical support, bug fixes, and minor upgrades. To deal with the anticipated demand, the server is linked to a high-capacity T3 line.

Microsoft will also ship PPP in Chicago and include a list of Internet service providers so users can easily set up Internet accounts.

Client tools are in the works with Chicago and include Internet access, communication, and navigation tools, sources said. But in the initial release, users will have to use third-party Internet communication applications like Mosaic. An automatic subscribe feature in Chicago will provide push-button access to commercial on-line services such as CompuServe and America On-Line, sources said.

Chicago includes a communications applet from Hilgraeve Software Inc. that lets users

access remote systems through modems for data communications, terminal emulation, and file transfers with FTP.

"Our software will be used for calling BBSes, CompuServe, and other dial-up systems and public services," said Matt Grey, Hilgraeve's president.

Ultimately, Microsoft plans to provide its own on-line service and is negotiating with information providers and long-distance carriers Sprint Corp. and MCI, sources said.

Some sources say Microsoft does not want to own the content and will just require a 15 percent distribution fee, allowing content providers to collect their own charges.

Analysts predict otherwise.

"With the [SEC] investigation over they are clear to enter that realm [of on-line services]," said Lisa Thorell with Dataquest, in San Jose, Calif. "The wonderful thing about on-line is the barriers to entry are low. When you get big players like Microsoft with massive marketing reach and capital, they could spoil the game."

# AT&T to bolster NT's corporate image

BY CLAIR WHITMER

Admitting that it needs a little help from a friend to bolster Windows NT's standing in large-scale enterprises, Microsoft Corp. last week unveiled an agreement with AT&T Global Information Solutions (GIS) to expand the NT support network and port several AT&T client-server technologies.

Steve Ballmer, Microsoft's executive vice president of sales and marketing, conceded that since its introduction a year ago, NT sales have been hampered by the perception that Microsoft doesn't know how to deal with enterprises.

Microsoft's support was a particularly sore point for customers used to the focused attention of their information technology vendors.

"It was basically, 'How many palette-loads of shrink-wrapped software do you want dropped off?'" said Gary Galunas, systems manager for corporate communications at K-Mart Corp., an NT user invited to the announcement.

The agreement with GIS opens AT&T's 19,000-employee global support force to Windows NT customers so that

any NT user can call the Global Support Center, in Columbia, S.C., 24 hours a day with support and service questions.

A single user in the United States pays \$180 per year for the service; the cost drops for corporations with more than 25 users and is as low as \$27 per user if more than 500 users are enrolled.

Overseas customers in 120 countries can also arrange to consult with NT-certified AT&T technicians on the architecture and design, migration, and implementation of NT-based systems.



Microsoft's Ballmer expects strong NT sales this year.

"People don't ask for custom patches or fixes for Excel. That's new for us, something we haven't had to do with our traditional business," Ballmer said. "[AT&T can be available] where our customers need feet-on-the-street service."

Ballmer did not rule out the possibility of signing similar support deals with other systems integration service providers. "There's very little that gets in the way of [the relationship with AT&T] being harmonious," Ballmer said.

The agreement also includes the port of several add-on AT&T technologies to NT over the next 12 to 18 months. The technologies include:

- Top End, a transaction processor;
- LifeKeeper, high availability and clustering software;
- NetVault, tape storage and CommVault hierarchical storage management utilities; and
- OneVision, systems and network management software.

AT&T will also supply the Advanced Server for Unix, a port of Microsoft's LAN Manager, so that Unix systems can be integrated with Windows clients and Windows NT servers in mixed environments.



GemStone 4.0 includes new visual tools for building forms, designing database schema, and managing application code.

# Servio revamps its object database

## Challenge to relational databases

BY MIKE RYCHUZI

Servio Corp. is aiming to prove that object databases can handle the demands of commercial IS, as it releases Version 4.0 of its GemStone object database, scheduled to ship this week.

Large IS shops have typically shunned object databases for production applications in favor of relational databases from Oracle Corp., Sybase Inc., and other vendors. Object databases, which store data as self-contained objects rather than in rows and tables, have been used instead as a means to store irregular data types such as audio or video.

IS managers complain that object databases lack adequate administration tools, don't scale beyond single-processor systems, lack security, and have applications tied to them that are complicated and hard to write.

Servio said last week that GemStone 4.0 addresses all these questions.

The upgrade supports much larger applications, uses a new shared-memory design to increase performance, includes easier-to-use administration tools, and supports IS-type transaction processing and other heavy I/O-dependent applications, the company said.

GemStone 4.0 also supports replication, will run on clustered systems, and supports applications programmed in C++ as well as Smalltalk.

"This release is a lot more like a relational database in terms of administration and transaction logging," said Ian Gilchrist, a database architect at Monenco Agra Inc., in

Ottawa, Ontario.

Transaction logging protects database integrity by keeping a record of database activity.

"That's a card that relational guys have played against the object vendors for some time, but GemStone now has it," Gilchrist added. "This version adds a lot of real-world usability. [Servio] has done a major reworking of the database."

In addition to defending the benefits of object data storage, with this release Servio hopes to prove itself in the object database arena and regain market share lost to Versant Object Technology Corp. and Object Design Inc. (ODI).

But this upgrade may not be enough to regain Servio's lost momentum, some analysts said.

GemStone was the first — and for some time the only — object database to support Smalltalk, which was Servio's main competitive advantage, said Natasha Krol, a vice president at the Meta Group in Westport, Conn.

But Versant and ODI used licensing agreements with other vendors, including IBM, to bypass Servio in the market.

Krol said Servio still leads both companies "in sheer functionality. But those companies now have larger market share and it will be hard for Servio to catch up."

GemStone 4.0 is priced from \$20,000 for a four-user license. It runs on IBM's AIX, Hewlett-Packard Co.'s HP-UX, SunSoft Inc.'s Solaris, and Sequent Computer Corp.'s Symmetry Unix servers and supports Windows 3.1, OS/2, and Macintosh clients.

## Chicago opens Mail options

Will offer remote access, multiple views, and RTF

By Doug Van Kirk

Microsoft Mail users won't need the Exchange-based server to get tangible benefits from the new Mail client that will ship with Chicago at the beginning of next year.

Microsoft Corp.'s next release of Windows, currently called Chicago, will include an upgraded version of the Microsoft Mail client that will provide a number of new features when connected to current Mail 3.2 post offices, company officials said.

For instance, the Mail client for 32-bit Windows will sport Rich Text Format (RTF), multiple inbox views, blind carbon copies, and remote access. These features will be available when the client is used with a Mail 3.2 post office.

Microsoft also plans to build Exchange clients that will provide for 16-bit Windows 3.1 and DOS maps of the same capabilities, including blind carbon copies, company officials said.

The enhanced features will also be available when Chicago PCs are connected on a peer basis, said Todd Warren, Microsoft group product manager for Exchange.

The Chicago Mail client will



Under Chicago, Microsoft Mail 4.0 will provide views of mail integrated with other information resources.

support a unified inbox that will let users get mail from multiple sources without logging on to separate E-mail systems. The client will ship with drivers that retrieve mail from CompuServe and other on-line services, and users will be able to schedule polling of each service separately.

"When customers add Exchange servers, they'll use the same client to gain access to a whole new world of information," Warren said.

When Exchange ships, this same client will display the additional data resources made available through the server, such as replicated public folders, discussion databases, and forms and workflow routing.

Under Chicago, E-mail is displayed through the Explorer, which is a view of the Info Center, one of three representations of system organization, Warren said. (Computer and Network Neighborhood comprise the others.) The Explorer provides a view of data based on content.

The high level of integration between Mail and Chicago will make E-mail much easier and more intuitive, according to Warren.

For example, users will be able to drag and drop messages from their inboxes directly to their hard disks, with the subject field becoming the file name, provided long file names are in use.

## Compaq adds warning label to keyboards

By Yvonne L. Lee  
and Kate T. Corcoran

Amid growing concern that improper keyboard use could cause injuries to hands, wrists, and other joints, Compaq Computer Corp. announced last week it will put warning labels on its computers.

The labels — which read "WARNING! To reduce risk of serious injury to hands, wrists, or other joints, read *Safety & Comfort Guide*" — will accompany every computer keyboard that Compaq ships starting in the fourth quarter, a representative said.

Microsoft Corp. officials confirmed that they also plan to include warning stickers similarly directing users to a booklet on ergonomic computer use with an ergonomic keyboard that the software giant intends to introduce later this year.

The companies said there is no scientific evidence that typing at a keyboard causes these injuries; they may be trying to insulate themselves from law-

suits from keyboard users who have joint injuries.

IBM is named as a defendant in two such lawsuits, which have been delayed from June until late this year. Earlier this year, a Houston jury decided that because Compaq did not know that there was a possibility for injury, the company did not have to warn its customers. After that lawsuit, the company can no longer claim such ignorance.

"Now that they know about a potential risk, they are responsible to tell the public about it," said Roy Jordan Jr., a West Palm Beach, Fla., attorney who deals in product liability cases.

Although employers cannot be held liable in such cases, IS managers said they were concerned that such labels might raise worker's compensation claims.

"When I see labels, it brings to mind problems I never knew existed before," said Victor Mutnick, vice president of New York Life Insurance Co.

An IS manager from a truck

rental firm said the stickers may prompt her to warn the human resources department to form a policy on these types of injuries.

Because these injuries — also called cumulative trauma disorders — occur over a long period of time, not all companies acknowledge that the injuries are work related.

Although the increased awareness may initially raise worker's compensation claims, they may ultimately level off as workers become educated about safer work practices, said Robert Dieterich, managing editor of *VDI News: The Computer Health & Safety Report*.

"You get a flurry of claims from people who had been ignoring their problems, then it levels off," Dieterich said.

Other companies, such as Apple Computer Inc., already include guidelines for ergonomic use of their keyboards but have no warning labels and no immediate plans to include them.

## Advantis to build network to deliver ATM services

By Bob Wallace

Advantis, a joint network partnership between IBM and Sears, Roebuck and Co., is quietly building a \$250 million nationwide Asynchronous Transfer Mode (ATM) network that next year will start delivering data, voice, and video services to businesses, sources within Advantis said.

With the imminent entrance of IBM and Sears, ATM users who now rely on long-distance telephone companies are expecting better prices and more services. The project, to be announced this fall, will also package high-speed services with IBM WAN equipment.

At an as-yet-unspecified date, Advantis will roll out voice and video offerings. All will use the ATM backbone network.

Advantis could also provide faster response to service needs and better disaster recovery.

"There is more to staying with a service than just price," said Jim Fay, director of strategic technology for PMI Corp., a San Francisco mortgage insurance firm.

Advantis' ATM project rep-

resents a push by the company to break out of its role as a mere outsourcing vendor, and it could make Advantis a serious competitor to AT&T, MCI, Sprint Corp., and WorldCom.

ATM-based voice service is critical to the ATM equation because most users cannot justify the cost of ATM solely for high-speed data traffic.

"There's huge user demand for advanced data services, especially frame relay," said Christine Heckart, an analyst with TeleChoice Inc., in Verona, N.J. "Companies will welcome a solid alternative to the telcos."

To provide ATM-based services to users, Advantis will deploy at least two IBM BANY ATM switches, each with 4.2-gigabit-per-second transmission capacity, in 35 service sites by year's end. The company will also build "last-mile" fiber links between corporate sites.

The IBM ATM switches will replace time-division multiplexers from Network Equipment Technologies Inc. that handle Advantis' current voice and data needs. Advantis officials have not settled on service pricing, sources said.

## Spy to ship AirMosaic

Boosts Internet browsing access

By Karen Rodriguez

Spy Inc. will ship the first commercial version of Mosaic next week in its AirSeries 3.0 package. The AirMosaic front end will offer Windows users an added level of functionality for browsing World Wide Web servers on the Internet and more support than is currently available when pulling shareware off the Internet.

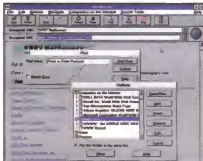
Spy has added better tools for indexing information and improved the user interface so users can configure their E-mail address without quitting Mosaic. Future versions will

offer easy-to-use tools for building multimedia documents for distribution on the Internet.

Spy's AirMosaic lets users create Hot Lists to preserve their place in cyberspace with a bookmark-like address in a menu. When the program is in Kiosk mode, firms can turn a computer into a kiosk for public viewing of information.

"The city of Seattle is setting up a PC as a kiosk in the Seattle Center for visitor information, so users can see a map of the city and get easy access to other information," said Chris Wilson, an engineer at Spy, who wrote the Windows version of Mosaic at the University of Illinois' National Center for Supercomputing Applications (NCSA).

Spy's AirSeries 3.0 is expected to cost \$400 and include other TCP/IP applications such as AirNews, AirMail, and a File Transfer Protocol client integrated with the Windows File Manager.



AirMosaic's customizable menus let users find places they frequently visit on the Internet.

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# Oracle to unveil Documents groupware lineup

By Mike Ricciotti

Oracle Corp. will unveil its competitor to Lotus Development Corp.'s Notes, code-named Oracle Documents, next month at Oracle's user conference in San Francisco, said a company executive last week.

In addition to the Oracle Documents engine, the groupware strategy comprises an entire product family, including the Oracle 7.1 relational database; the Oracle Media Server; ConText, Oracle's text search and retrieval engine; and Oracle Office, the current group-

ware messaging and scheduling software that includes Oracle Mail, according to Kitty Cullen, Oracle's vice president of multimedia worldwide marketing.

These components will be sold separately and will plug in to the Documents groupware base running on Unix with support for Windows clients.

Cullen would not disclose pricing or exact ship dates but said Documents' components will begin shipping on a staggered schedule by year's end.

Documents' interface and Oracle Office have entered beta testing at limited sites,

sources said. Some components, such as ConText and the Media Server, are already available.

Oracle Documents will be sold primarily as a groupware database for managing text files, Cullen said. Through Media Server, Documents will also manage desktop publishing files and presentation graphics, as well as sound files, video clips, and pictures.

"[Word processing documents] is the No. 1 application in corporate use today, but there is no way to manage that data," Cullen said.

Oracle Documents will manage text and provide E-mail in much the same manner as Lotus Notes, Cullen said. But Oracle Documents will surpass Notes through its capability to manage multimedia information, such as video and audio, Oracle officials said.

Because it is built on the Oracle 7.1 database, Documents will also manage relational data and allow SQL-based queries and data replication. Notes allows replication but is based on a flat-file database.

"Documents' architecture is Oracle7 for managing struc-

tured data," Cullen said. "The middle layer uses Oracle ConText to manage text services, and then Media Server to handle audio and video."

All tools designed to work with Oracle7 can also be used to build Documents' applications, so Oracle developers already have the skills needed to build Documents groupware applications, Cullen said.

Sources familiar with Oracle's plans said Documents is designed to link to existing Notes databases and will provide gateways to E-mail systems from several vendors.

## Dell pushes corporate OptiPlex line has network features

By Bob Francis

Dell Computer Corp. is aggressively pushing Pentium technology for the desktop and this week will officially announce several desktop systems aimed at the corporate market.

The new OptiPlex systems will start at \$2,749 for a 90-MHz Pentium system with 8MB of RAM, a 210MB hard drive, and a 14-inch monitor, Dell officials said. (See "Dell, Compaq ready new PCs," August 15, page 8.)

Other enhancements to the OptiPlex line include enhanced IDE, network-ready setup, Plug-and-Play compatibility, power-management features, and a new monitor design.

Sources said Dell wants to quickly introduce a 100-MHz Pentium into the OptiPlex line as soon as those chips are available from Intel Corp.

New 486-based systems in the OptiPlex line include a 33-MHz 486SX system with 4MB of RAM, a 210MB hard drive, and a 14-inch monitor for \$1,279.

The Pentium-based OptiPlex systems utilize the PCI bus for local bus video, while the 486-based systems use the VESA Local Bus.

The OptiPlex systems include Dell's Network Setup program, which is pre-installed on the hard drive and enables the system to be configured with factory-installed network interface cards and workstation drivers.

Using the Network Setup program, users can connect the network cable to the PC, turn on the system, and the PC will configure itself to the network.

The system will also have an Auto PowerOn feature, which will let systems administrators

program the system to turn itself on at specific times.

The feature can be used to perform system maintenance functions, such as file backup, or allow for remote network access at specified times, the company said.

The low-profile OptiPlex system will include three expansion slots and three drive bays; the midsize desktop line will include five slots and five drive bays; and the new mini-tower chassis will include six slots and six drive bays.

Dell is pushing the Pentium systems, according to Jim Poyner, an analyst with Oppenheimer & Co. in New York.

"They've got to differentiate themselves from other suppliers out there, like Compaq, who haven't made a big push on Pentium yet," Poyner said.

Dell is also attempting to strengthen its presence in the enterprise server market with the addition of Mark Garver as the head of Dell's server division, company officials said.

Garver, previously vice president of corporate strategy for Tricord Systems Inc., should market Dell's credibility for its server products in the enterprise market, analysts said.

Dell's existing servers are designed more for departmental use rather than as enterprise products, said Susan Frankel, an analyst for International Data Corp. in Framingham, Mass. Garver's legacy at Tricord, an enterprise server developer, could help Dell gain respect, she added.

Dell took a similar route when it hired PowerBook developer John Medina away from Apple Computer Inc. to revamp Dell's unsuccessful portable line.

## Intel offers solution for faulty BIOS setting

By Bob Francis and Brooke Crothers

Intel Corp. acknowledged that a faulty BIOS setting it recommended to manufacturers has caused some of the troubles afflicting their PCI-equipped 90-MHz Pentium systems.

The admission came following complaints from users and manufacturers about problems surrounding systems using the high-speed Pentium chip. (See "Flaws affect adoption of 90-MHz chip," August 15, page 1.)

The problems that Intel acknowledged affected only SCSI controllers connected to its Neptune PCI chip set, a company spokeswoman said.

The faulty setting prevented

users from booting their systems in the DOS environment and has since been corrected, she said.

IDE controllers connected to the Neptune PCI bus were unaffected, she added.

But start-up problems represented only a small percentage of the flaws reported by users.

Other problems included data corruption, malfunctioning peripheral devices, and systems that suddenly stopped working.

Not all of those problems were laid directly at Intel's feet; some users and manufacturers criticized third-party board manufacturers for delivering faulty products as well.

Whatever the extent of the problems, users are hoping

Intel's solution works.

"Our Gateway representative admitted there were problems with the motherboard, but he said they'd been fixed," said one user. "We've just ordered some new 90-MHz systems and [Gateway 2000 Inc.] said the latest ones were fine. If they aren't, they'll really screw us up, because we're using them in a network."

Another user who has already received a corrected motherboard is satisfied.

"I had problems as soon as I got my system and thought I was doing something wrong," he said. "After several weeks, [the PC company] finally took my system back and replaced the motherboard. No problems since."

## Microsoft plans migration to Exchange

### Migration tools now in testing

Microsoft Corp., wanting all roads to lead to its Exchange messaging server, will deliver migration tools from most popular E-mail systems when Exchange ships in 1995.

Migration Wizards, being tested by a select group of corporate Exchange beta testers, will let E-mail administrators migrate both messages and schedule data from Lotus Development Corp.'s cc:Mail, IBM's Profs, Digital Equipment Corp.'s All-in-One, and Microsoft Mail.

Microsoft Mail users on AppleTalk networks are also supported, said David Perry, lead product manager at Microsoft's messaging products unit.

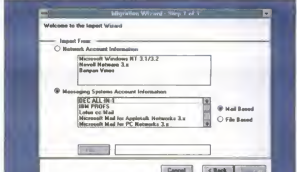
The utility will ease the migration task so users will not need to re-create accounts on Exchange. Account migration

can be based on the source messaging system or pulled directly from NetWare, Vines, or Windows NT user directories.

In addition to migration, Microsoft will also support two-

way links to popular E-mail packages via drivers for the Exchange server. This will allow users to gain access to multiple mail systems through a single inbox.

— Doug van Kirk



With Exchange's Migration Wizards, administrators will be able to build directories based on E-mail or network accounts.





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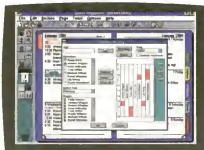
pad and an anniversary reminder.

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# IBM buys Transarc to expand client/server portfolio

BY MIKE RICCIUTI

In a move that IBM watchers interpreted as a first step toward acquiring a broader portfolio of client/server technologies, IBM last week purchased Transarc Corp., a leading client/server on-line transaction processing (OLTP) software vendor and key contributor to

the Distributed Computing Environment (DCE).

Transarc, headquartered in Pittsburgh, will operate as a wholly owned subsidiary of IBM, and none of its more than 200 employees will be affected by the acquisition, the companies said. They did not disclose the terms of the acquisition.

Analysts saw the move as a signal of IBM's intent to purchase whatever technology it needs, either through company or product acquisitions, to compete with Microsoft Corp. as a major player in client/server and distributed systems.

"It's ultimately a square-off between IBM and Microsoft [over] who plays the enterprise gig," said Chet Geschickter,

vice president of *Client/Server Tool-Watch*, a Newton, Mass.-based news-letter.

Transarc sells Encina, a Unix-based client/server transaction processing (TP) monitor, and the Distributed File System, a major component of DCE. Before last week's acquisition, IBM already owned roughly 40 percent of Transarc and was reselling Encina. IBM also sells its own Unix TP monitor, the CICS/6000, which is partially based on Encina.

IBM bought the privately held company to support Transarc's well-respected development team and technical expertise in distributed systems.

IBM can use this expertise to update its own aging CICS technology, said Rich Evans, an analyst with the Meta Group in Westport, Conn.

## Analysts see the acquisition as a challenge to Microsoft.

"CICS is older than Woodstock. The added technology will make it run better in an open environment," Evans said.

IBM will also gain access to Transarc's DCE expertise. IBM is gradually adding DCE capabilities to its OS/2 and AIX Unix operating systems, as well as to mainframe and midrange operating systems.

"This is significant technology that Microsoft doesn't have and maybe doesn't understand," Geschickter said. "IBM is emerging as a strategic provider of enterprise client/server technology."

Ellen Hancock, IBM's general manager of networking systems and software solutions, said in June that IBM was looking to acquire companies to provide technology help, particularly in tools and client/server systems. Sources said Transarc is the first of several such acquisitions.

IBM would not comment on additional planned acquisitions.

—Scott Mace contributed to this story.

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## For the record

A front-page graphic titled "Cellmex regulates ATM voice traffic" in the August 8 issue incorrectly identified as a T1 an Asynchronous Transfer Mode (ATM) link between the Cellmex and the ForeRunner ATM switch.

The story "75-MHz Pentium is key to Intel's desktop plans" (August 15, page 1) mistated the year in which 4 million Pentiums are expected to ship. Alex. Brown & Sons Inc. places Pentium shipments at slightly less than 4 million in 1994.

Also in the August 15 issue, the First Look on page 104 incorrectly stated upgrade qualifications for Adobe Photoshop 3.0. Anyone who purchased Photoshop, Version 2.5 after June 15 will receive a free upgrade.

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has been an extremely expensive and time-consuming task.

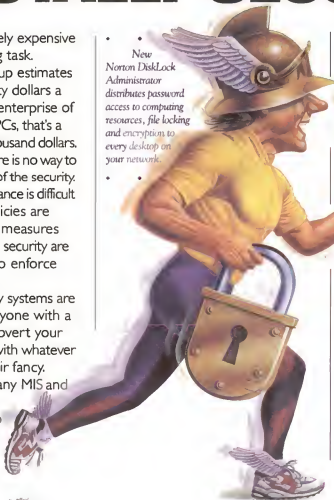
The Gartner Group estimates the cost is about sixty dollars a desktop. Even in an enterprise of just twelve hundred PCs, that's a bill of seventy-two thousand dollars.

Once installed, there is no way to measure the efficacy of the security. Enforcing user compliance is difficult at best. Security policies are often ignored. Basic measures like simple password security are notoriously difficult to enforce among your users.

And many security systems are inherently weak. Anyone with a start-up disk can subvert your efforts and walk off with whatever data that strikes their fancy.

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by someone walking around with a set of system start-up disks.

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A remote log-in will automatically update your site license metering.

Together these products will help you manage your end-user resources more effectively. So

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## Trio planning to offer ISDN access via frame-relay service

By Bob Wallace

AT&T, WitTel, and CompuServe Inc. are deploying equipment in their networks that will finally enable small offices and telecommuters to use pay-as-you-go ISDN lines to access the carriers' frame-relay services beginning next year.

ISDN access provides users two

64Kbps channels to frame-relay services; this is a midrange access option many users have been looking for, sources said. ISDN links can also be used for low-cost frame-relay backup.

Currently, frame-relay users' only choice is between sluggish 14.4Kbps dial-up access (via modem) and a high-cost dedicated line that provides a minimum bandwidth of 56Kbps.

The coming ISDN option means managers can extend frame-relay networks to smaller remote sites for between \$20 and \$40 per month, as opposed to \$200 to \$300 per month for a dedicated 56Kbps link.

CompuServe's ISDN access will go on-line in the first quarter of 1995; AT&T is promising ISDN-to-frame-relay service by mid-1995. WitTel would

not commit to a date for its ISDN option.

"This [ISDN access to frame relay] is going to blow the frame-relay market wide open," said Michael Finneman, president of dBrn Associates, a Hewlett Neck, N.Y., research firm.

"We probably have five or six sites with 56Kbps access lines that would probably be better served using ISDN," said Phil Marzullo, vice president and CIO at Ren Corp., a Nashville, Tenn.-based kidney dialysis firm and long-time WitTel frame-relay user.

"We also have small clinics ... that are only open three days a week that could use ISDN access," Marzullo said. Ren uses its frame-relay network to carry patients' medical data.

Carriers haven't set pricing for their ISDN-to-frame-relay services. The device that makes the link possible is the Integrated Network Server (INS), developed by StrataCom Inc. and available now for the first time.

Nationwide, telephone companies offer ISDN access to between 40 percent and 80 percent of their customers, with all planning aggressive ISDN deployment during the next several years. (See "Bellcore makes breakthrough in ISDN access," April 4, page 1.)

Vertical Systems Group, a Dedham, Mass.-based consultancy, forecasts that frame-relay service sales will exceed \$1 billion in 1997.

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## ColorMatch brings low-cost pre-press to Macintosh users

A low-cost color management software package for the Macintosh that offers users entry-level prepress-quality color matching is now shipping from DayStar Digital Inc.

DayStar's ColorMatch ensures that output from printers, copiers, and film recorders matches as closely as possible what a Mac user sees on a display, said Gary Dailey, director of product management.

At \$219, ColorMatch also costs thousands of dollars less than existing professional color management systems, while offering the same functionality, he added.

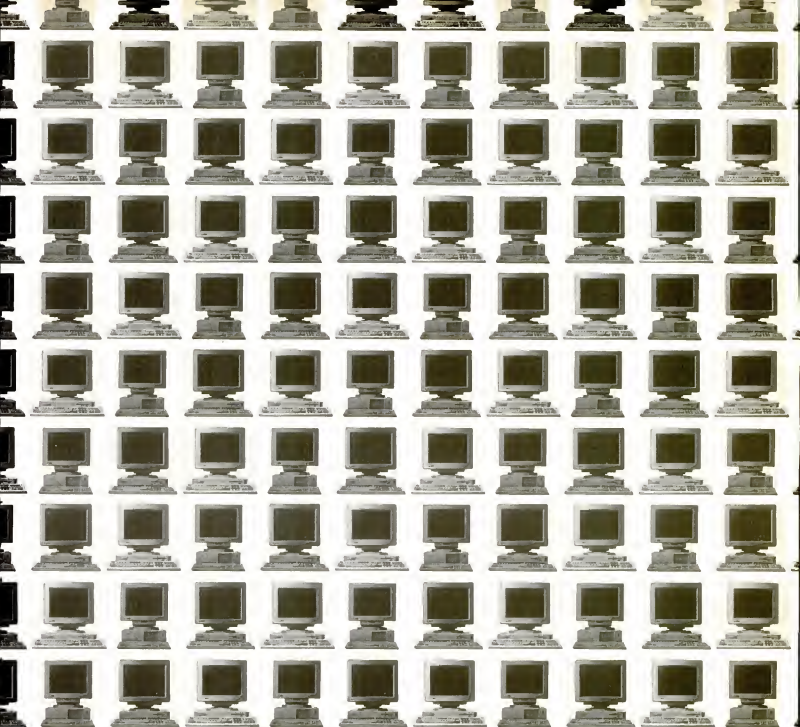
ColorMatch allows for much closer matches among a wider range of colors than Apple Computer Inc.'s ColorSync color-matching technology, Dailey said.

ColorMatch will ship with Device Color Profiles, which include profiles for printers and copiers from Eastman Kodak Co. and Canon Inc. and dye-sublimation printers from QMS Inc.

ColorMatch is based on Kodak's Precision Color Management System and currently works only with Quark Inc.'s QuarkXPress and Adobe Systems Inc.'s Photoshop.

ColorMatch will be compatible with ColorSync 2.0, which Apple is expected to ship by year's end. Applications compatible with ColorMatch will also be able to work with ColorSync, DayStar officials said.

—Tom Quinlan



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*"Microsoft Access 2.0 does an excellent job of bridging the gap between end user and programmer, providing easy-to-use tools without sacrificing power and flexibility." - PC Week 2/28/94*

*"The new version [of Microsoft Access] makes it easier to share information between programs, and includes new features for every level of user." - PC World 6/94*

*"Microsoft Access 2.0 for Windows [is] coming closer than any other database product ... to achieving a mix of features, power and ease that's well-suited to novices, developers and everyone in between." - PC Magazine 6/14/94*

## MICROSOFT ACCESS. IT KEEPS PICKING UP MOMENTUM.

With all the critical acclaim that's coming down, it's no wonder Microsoft Access<sup>®</sup> relational database management system 2.0 is building such a big following. Among everyone from database beginners to high-end developers to the reviewers. PC Magazine found it had extraordinary power and ease-of-use. From setting up a database to creating forms and reports to developing applications. They said its "polished

technology and user-friendly wizardry are a major step ahead." And they gave Microsoft Access 2.0 their Editors' Choice award in both the end-user and developer database categories.

Windows Sources added their take, "[Microsoft] Access 2.0 offers significant enhancements for all levels of users ... who want an all-purpose Windows<sup>®</sup>-based DBMS."

So come and see for yourself what Microsoft Access 2.0 is all about. And discover why news this good has a way of snowballing.

Microsoft Office



Microsoft Office Professional, shown here, includes: Microsoft Excel, Word, Microsoft Access, the PowerPoint<sup>®</sup> presentation graphics program and a Mail-merge/Internet server and software must be acquired separately. © 1994 Microsoft Corporation. All rights reserved. In the U.S. call 1-800-350-9030. In Canada, call 1-800-387-9030. Outside the U.S. and Canada, call your local Microsoft subsidiary at 1-800-387-9030. Comments like are that of individuals and not Microsoft. Microsoft and Windows are registered trademarks and Windows is a trademark of Microsoft Corporation. Quotes used by permission. Reprinted from PC Magazine, June 14, 1994. Copyright © 1994 Ziff-Davis Publishing Company L.P. Reprinted from PC Week, February 28, 1994. Copyright © 1994 Ziff-Davis Publishing Company L.P. Reprinted from PC World, June 1994. Copyright © 1994 PC World Communications, Inc. Reprinted from Windows Sources, May 1994. Copyright © 1994 Ziff-Davis Publishing Company L.P.



## NEWS / SOFTWARE

## PIPELINE

## SHIPPING

## Maximizer modules

**Target Windows updates**  
Suite fever reaches the sales department with Maximizer Sales Suite for Windows from Modatec Systems Inc. The \$379 suite contains contact management, database managing, report writing, and fax communication modules and offers task-specific integration between the four applications using DDE. The next version, to ship in March 1995, will support OLE 2.0 and have additional calendar and E-mail integration. (800) 804-6299.

Designed specifically for pen computers, SalesPak 2.0 from **Mobile Computing Systems** is a customizable field-sales automation software package. With the system, which runs on Windows 3.1 or Windows for Pen 1.0, users can collect orders, make notes, and communicate with other sites to update information. A single-user price is \$300. (415) 696-1290.

## ANNOUNCED

## C++ ToolSet boosts object database

Versant Object Technology Corp. announced C++ ToolSet, Version 3.0, for its object database last week. New features include better reporting tools, faster performance, and an improved GUI screen builder. Prices start at \$600 per user. Existing ToolSet customers will receive Version 3.0 free. (415) 329-7500.

## Management Information

**Technology Inc. (MITI)** said last week that by year's end it will integrate Grafman, a graphical development tool from Softtek International Inc., with its SQR Workbench database report writer. The tool allows query results to be displayed as bar charts, pie charts, and other graphics, and included as part of printed reports. SQR Workbench is priced from \$1,200 per user. (310) 424-4399.

## PRICE CUTS

## Cincom cuts price of Supra database SDK

Cincom Systems Inc. has cut the federal government price of its two-user Supra database server developer's kit (NT or OS/2 version) from \$995 to \$95. The developer's kit, which sells for \$2,450 to \$2,650 for commercial customers, includes Windows NT, OS/2, DOS, and Windows client tools and an Open Database Connectivity (ODBC) driver. (800) 543-3010.

## Illustra Server moves to NT

By Mike Ricciuti

Illustra Information Technologies Inc. is bringing its hybrid object-relational database from Unix to Windows NT, with the goal of letting NT users store object data types, such as video and audio, that are not easily manageable with many relational databases.

The Windows NT version of the Illustra Server will ship this fall; Illustra officials said they are also considering developing a Windows version.

The Illustra database stores data in standard relational row-and-column format, as well as

object data such as video, audio, and images. All data can be queried using standard SQL commands.

Users can also define custom data types or add new data types though Illustra's separately sold plug-in modules, called DataBlades.

The American Board of Family Practice Inc., a physician certification board in Lexington, Ky., is using a multimedia application based on Illustra under Windows NT to recertify its member physicians.

"[Illustra] lets us store and retrieve significant amounts of complex data types, plus we can

query it all with SQL," said Richard Rovinelli, president of Rovinelli Associates, the consulting firm building the certification system.

Rovinelli said he looked at Oracle Corp.'s relational database, Oracle7, but it didn't store X-rays, video, and other multimedia information.

Illustra officials said the company will also develop next year an Illustra Server API that will simplify application development with Windows-based development tools, such as Visual Basic, PowerBuilder, and Visual C++.

The version due in the fall will not include the API.

A single-user license for Illustra Server on Windows NT is \$1,995.

Illustra, formerly Montage Software, is in Oakland, Calif., at (510) 652-8000.

## All data can be queried using standard SQL commands.

## Oracle terminates talks with Gupta

By Elnor Mills and Mike Ricciuti

Database giant Oracle Corp. has ended talks with smaller rival Gupta Corp. and dumped the 2.4 percent of Gupta stock it held, Oracle announced last week.

Oracle had been attracted by Gupta's popular SQL Windows development tools, which users said offered more innovative features than Oracle's tools. One-time high-flyer Gupta has suffered a rocky financial season and is locked in a fierce price war with competitor Powersoft Inc. (see chart).

Nonetheless, Gupta officials were not disappointed by the end of the discussions.

"It's something that's not unexpected," Gupta spokesman Dan Berkowitz said. "But we're always engaged in talking to them about strategic alliances, so don't rule any other announcements out."

Oracle concluded it would be better to build its own tools for the low-end market, said Zach Nelson, vice president of Worldwide Marketing Programs at Oracle.

"It became clear that it was a better investment to continue and accelerate the development of Project X," Nelson said. Project X is the code name for Oracle's object-oriented tool due to be released next year.

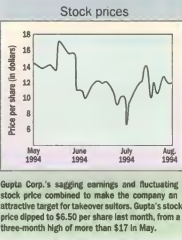
But some users of both Gupta and Oracle software may be disappointed by the cancellation.

"Gupta has been in the Windows tools business for some time, and they have a lot of firsts to their credit, such as multitasking access. You can't do that in [Oracle's] SQL Forms," Nick Donatone, chairman of the New Jersey Oracle Users Group in Mount Olive, N.J., said while talks were still on. "It would be a good marriage."

Speculation of a takeover arose when Oracle bought 7.7 percent of Gupta's stock in July. Two days later, Oracle sold off two-thirds of the stock. Two weeks ago, Gupta, in Menlo Park, Calif., adopted a poison pill plan to make a takeover too costly.

Gupta plans to target enterprise-level applications this fall by unveiling SQLBase 6.0 and shipping a Quick Object for connecting SQL Windows applications to Novell Inc.'s Tuxedo transaction processing monitor.

## Gupta's earnings, stock price on the slide



## TI to offer IEF business APIs to third parties

By Scott Mace

Texas Instruments Inc. this week will plot a course to open its Information Engineering Facility (IEF) business modeling and application partitioning tool to other client/server software development tools, company officials said.

Through the IEF Open Initiative, TI will deliver documentation and a set of IEF APIs to customers and Open Initiative charter members in the fourth quarter of 1994, the company said.

The initiative will be endorsed this week by seven vendors: Business Objects Inc., PercLogic Inc., Applied Business Technology Corp., BenchMark Technologies Ltd., Brownstone Solutions Inc., Autotester Inc., and Castek Software Factory Inc. The Open Initiative members pledged to integrate the IEF API into their tools.

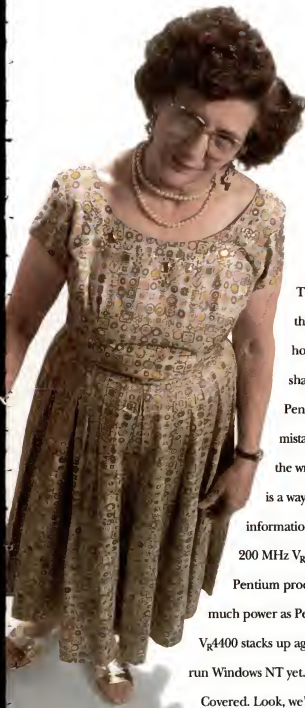
Once the API is implemented, information about applications modeled in IEF will be available for use in these third-party tools, which range from testing tools to version-control software to business object libraries.

Analysis said last week, however, that the initiative may not be enough to popularize IEF. IEF's Software-to-Pictures technology, which comprises the core of the IEF tool, works very well for creating procedural applications, but fares poorly compared with more object-oriented and event-oriented custom applications, such as offerings from Powersoft Inc. or Gupta Corp., according to Curt Monash, president of Monash Information Services, a New York consulting firm.

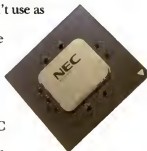
They need to add simple inheritance, custom controls, and other features," Monash said. Nonetheless, Monash and other analysts said the initiative may succeed in accelerating interest in IEF. TI first sparked interest in May and analysts in May, when it announced a strategic relationship with Microsoft Corp. to build a business object repository for Windows NT. (See "Microsoft, TI build repository for NT/AS," May 2, page 1.)

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**NEC**



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## Great Plains preps financial module to work with Notes

BY ILAN GREENBERG

Accounting data can be the most sensitive information in a company, which is why CPAs insist on high-level security in their software applications.

Great Plains Software Inc. says it has figured out how to give access to selected financial data via Lotus Development Corp.'s Notes groupware database while maintaining the core application's security in the accounting department.

Great Plains plans to announce in September Notes support for its Dynamics line of client/server accounting programs.

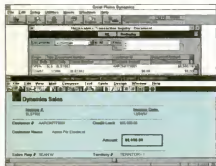
The modules will ship during the first week of 1995, according to officials. Pricing has not been determined.

The Notes module, called Integration Manager for Lotus Notes, seeks to widen access to accounting data and let multiple departments analyze and present accounting data, Great Plains said.

With the module, accounting department managers designate the data that will be distributed in a Notes database. The Notes database is automatically updated when the accounting application changes, but it's a one-way link, which means Notes users can't modify the accounting application. Accounting managers can turn off the flow of data to the Notes database.

"The Lotus [module] demonstrates Great Plains' vision to bring accounting data to non-accounting departments in a format understandable to people who aren't accountants," said Karl Wong, analyst at Dataquest, a research firm in San Jose, Calif. Great Plains also announced last week the Integration Imaging Module for Dynamics that lets users create an image library for storing scanned-in forms.

Great Plains is in Fargo, N.D., at (800) 456-0025.



Dynamics accounting modules help distribute financial data to corporate departments.

## Sybase's Enterprise Manager to help users handle distributed databases

BY MIKE RICCIUTI

Sybase Inc. became the first database vendor to throw its hat into the distributed database administration ring last week with the introduction of Enterprise SQL Server Manager.

Enterprise SQL Server Manager is priced from \$935 to \$23,150, depending on which platforms it will manage. The SQL Server database runs on Windows NT, NetWare, OpenVMS, and Unix. The Enterprise Manager itself will run on Unix/Motif and Windows NT and is slated to enter beta testing later this year, with shipment scheduled for early 1995.

Sybase built the tool with Tivoli Systems Inc., which sells the Tivoli Management Environment. Sybase is working to integrate the tool with systems and network management tools from 16 other systems management tool vendors, including Hewlett-Packard Co., AT&T, IBM, Legent Corp., and Novell Inc.

Sybase also announced updated versions of two existing management tools for local databases.

Although Enterprise Manager won't ship until next year, both local tools will immediately incorporate the Enterprise tool's new interface, both tools work in conjunction with Enterprise Manager when it becomes available, according to the company.

SQL Server Manager, formerly SA Companion, is a tool for drag-and-drop administration of local databases. It will ship later this year and is priced from \$375 to \$13,750. SQL Server Monitor, which replaces Sybase SQL Monitor, monitors local database performance. It will ship early next year and is priced from \$4,460 to \$10,520, Sybase said.

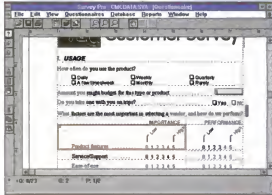
Users of SA Companion and Sybase SQL Monitor will receive the new tools as regular maintenance upgrades.

Sybase, in Emeryville, Calif., can be reached at (510) 596-3500.

### Product Spotlight

## Apian lets users choose survey design

How often do you need to conduct market research and customer opinion polls? A) never B) often. For those who answer B, Apian Software Inc. is shipping an updated version of its survey design software, Survey Pro for Windows. The \$695 Version 1.0 provides tools for designing questionnaires and tabulating the results. Using a data entry form replicated from the individual questionnaire design, answers to survey questions can be entered into a bundled Apian database that then tabulates the results and produces an Analysis Report. Menlo Park, Calif.-based Apian Software is at (800) 237-4565.



from the individual questionnaire design, answers to survey questions can be entered into a bundled Apian database that then tabulates the results and produces an Analysis Report. Menlo Park, Calif.-based Apian Software is at (800) 237-4565.

## Autodesk to link AutoCAD, MCAD apps

BY WILLEM KNIBBE

Autodesk Inc. is expanding its mechanical CAD (MCAD) product strategy with a new Mechanical Applications Initiative intended to integrate AutoCAD and third-party MCAD applications in design, analysis, engineering, and manufacturing, the company said.

The initiative's main goal is to provide a channel for AutoCAD to work with key vendors and customers to establish an API so that data can easily be passed between such MCAD applications as element analysis, rapid prototyping, and numerical control systems.

"At present, users who want to share data among disparate MCAD applications have to make do with data translations, which in addition to being time-consuming and laborious frequently are incomplete or inconclusive," said Bruce Jenkins, vice president at Daratech Inc., in Cambridge, Mass.

The initiative is a important step for Autodesk, analysts said, as it works to establish AutoCAD as a CAD standard and encourages third parties to offer integrated solutions in MCAD disciplines.

The initiative is intended to inspire third-party vendors to position stand-alone MCAD applications as AutoCAD add-ons, analysts said.

Camt Systems Inc. could be one of the first examples of this trend, having purchased the rights to the numerical control programming application ManufacturingExpert from Autodesk. Autodesk bought ManufacturingExpert in 1992 as part of its acquisition of Micro Engineering Solutions Inc.

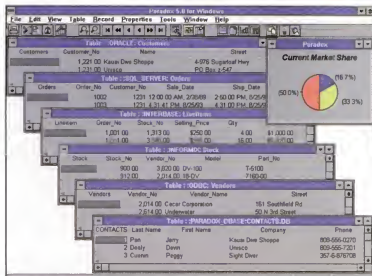
Autodesk is also instituting a new channel program to let dealers differentiate themselves in vertical markets.

An Autodesk System Centers certification will be granted to VARs with expertise in areas such as multimedia, mechanical design, architecture, and engineering.

From Dot Matrix,







Borland's SQL Links 2.0 will let users query databases such as Oracle7 and SQL Server from their PCs without having to use SQL commands.

## Paradox, dBase get automatic translation to SQL language

By Mike Ricciotti

Borland International Inc.'s SQL Links 2.0 for Windows will let Paradox and dBase users connect their applications to remote database servers without having to spend extra time deciphering SQL commands.

In addition to improving the tool's performance, the update to Borland's connectivity software, announced last week, adds automatic translation of Paradox 5.0 for Windows and dBase 5.0 for Windows query commands into the appropriate SQL dialect for connecting to back-end database servers. These include Oracle Corp., Sybase Inc., Microsoft Corp., Informix Software Inc., and Borland's own Interbase.

The latest versions of Paradox and dBase shipped last week. (See "Paradox and dBase for Windows ship," August 15, page 19.)

SQL Links lets users query back-end servers from their computers without having to use cryptic SQL commands to

communicate with the database server.

"You really don't have to know what back-end database you're talking to, and performance is definitely better," said Drew Wright, a SQL Links beta tester and vice president of PCSI Inc., a software development and consulting company in Englewood, N.J.

Wright is using SQL Links in client/server applications as the data communications software link to an Oracle7 database. The Oracle7 connects to this version of SQL Links.

"We were using O+E Library to connect to Oracle7, but there was no transparency and performance was definitely slower," Wright said.

SQL Links 2.0 for Windows is scheduled to ship in September, priced at \$149.95. Paradox 5.0 for Windows and dBase 5.0 for Windows contain coupons for a free copy of SQL Links, valid until December 31. Users pay \$14.95 to cover shipping and handling.

Borland is located in Scotts Valley, Calif., at (800) 353-2211.

# Merger fever heats up

## Software mergers, acquisitions to yield lower product prices

By Kate Orrange

Users may see greater functionality and better price performance as a result of a record number of mergers and acquisitions in the software industry in the first half of this year, according to a report released last week by Broadview Associates Inc., a mergers and acquisitions firm for the information technology industry.

The total value of merger and acquisition transactions in the software industry doubled from \$2.7 billion in the first half of 1993 to \$5.4 billion in the first half of 1994, according to the report.

The headline deals in the first half of 1994 include the mergers of Novell Inc. and WordPerfect Corp., Adobe Systems Inc. and Aldus Corp., and Computer Associates International Inc. and The Ask Group Inc.

The eight largest software deals, including these three, were valued at more than \$100 million apiece and represented a total value of \$2.8 billion.

Broadview counted a total of 173 software mergers and acquisitions in the first half of this year.

"In some of these more mature markets [such as WordPerfect's word processing and Ask's database software], some of the bigger players are consolidating the market through acquisitions," explained Scot Sedlacek, a principal at Broadview Associates, in Fort Lee, N.J.

For end-users, the merger fever means more than just a change in the name on the application box. Broadview analysts said.

The newly combined companies now boast access to greater resources, both in terms of revenue and technology. Some, such as WordPerfect and Novell, are already promising greater integration of current products and an acceleration of new products and technologies.

The merged companies are more likely to use their expanded revenue base to lower prices of individual applications, Sedlacek said.

**The eight largest software deals were valued at more than \$100 million apiece.**

## PowerBuilder Infobase uses ScreenCam to add voice narration to demonstrations

Powersoft Corp.'s PowerBuilder application development environment can now speak for itself when it comes to training novice users.

The latest version of the PowerBuilder Infobase CD-ROM, a technical information database bundled with all PowerBuilder products, now uses Lotus Development Corp.'s ScreenCam, a utility for recording, editing, and playing back Windows user sessions complete with voice narration.

The ScreenCam version of Infobase, which began shipping earlier this month, is designed to bring to life demonstrations on 25 technical subjects, such as how to use the debugger.

While ScreenCam plays back a recorded session with PowerBuilder, a trainer's

voice explains what is happening on the screen.

"It's almost like a videotape users can use at their desktops," said Alan Willford, a programmer at Data Commercial Credit, in Maumee, Ohio. Users without sound cards will not get the full effect, however, Willford said. "Without the sound it's really not too impressive."

Infobase ships free with all versions of PowerBuilder; an updated single copy including the ScreenCam enhancements costs \$95. Customers can buy quarterly Infobase updates on a subscription basis for \$195 per year for a single-user edition or \$995 for a server edition.

Powersoft, in Concord, Mass., is at (800) 273-2841 or (508) 287-1500.

—Scott Mace



To Inkjet,

# Users can spruce up Windows with Breeze

By DOUG BARNEY

Users who don't want to wait until next year for Microsoft Corp. to give Windows a new interface can do it themselves now with the \$54.95 Breeze utility from CrossWind Development Corp.

Breeze, which began shipping earlier this month, allows individual users or corporate IS professionals to customize the look and feel of Windows 3.1.

Users can add three-dimensional effects and decorative borders to Windows interface elements such as menus, dialog controls, title bars, and toolbars. The product has about 200 prebuilt borders.

"We have some that look like wooden frames, waterfalls, balls, diamonds, and even jewelry," said John Estes, president of CrossWind. Although users can use Breeze to change general interface colors, the borders cannot be modified.

Users said last week that they appreciate the ability to beautify their Windows environment.

"It makes Windows look better, more like some of the nicer Unix-type environments. In comparison to Unix, Windows is just sort of flat," said Bill Schwartz, an independent consultant in machine tool programming based in Anaheim, Calif.

"You can change the way it looks to fit your mood for the day."

Breeze also includes a suite of utilities accessible through the Breeze toolbar.

For example, with one of the included utilities, users can capture screens to the Windows Clipboard, where they are stored as BMP files, and paste them into other applications. But screens cannot be captured to other common graphics file formats such as .TIF or .PCX. Breeze also has a Magnify feature that allows users to zoom in on particular screen areas.

Like many other Windows utilities, Breeze can act as a program launcher or program switcher so that applications or groups of related programs can be launched with a right mouse click.

Microsoft itself will make more use of the right mouse button with the Chicago upgrade of Windows, where it will be used to bring up context-sensitive menus. In the meantime, Breeze can use the right button to maximize applications, access toolbars, and cut, copy, or paste.

"I can't really go back to plain Windows," Schwartz said. "I'm always clicking around with the right mouse button, and it doesn't do anything."

CrossWind Development, in Yorba Linda, Calif., is at (800) 792-1105.

# Wings delayed but soars in testing

Microsoft Corp.'s Wings, the version of Visual C++ 2.0 that generates 680x0 Macintosh applications from source code created on a Windows NT machine, just missed its original due date, but positive reviews from beta testers could make up for its delay.

Wings, originally scheduled to ship by the end of July, is now slated for a September release. The ship date will come a week or two after the release of the Daytona version of Windows NT, said Visual C++ product manager Bart Wojciechowski. A Power Macintosh version of Wings is on tap, but Microsoft has not set a date.

Officially known as the Mac cross-platform option for Visual C++, Wings got a thumbs-up last week from developers, in-

cluding graphics application vendor Micrografix Inc., in Richardson, Texas.

"I've been able to port one of our applications to the Macintosh with minimal work on the Mac," said Micrografix software engineer Ray White. White said the port to the Macintosh took three months and progressed smoothly.

Other developers concurred. "We've been using it since the alpha test stages and it's come a long way," said Kevin O'Connor, chief technology officer at Digital Communications Associates Inc., a communications software vendor in Atlanta.

Microsoft, in Redmond, Wash., is at (206) 882-8080.

— Scott Mace

Window Manager / Brian Livingston

# Suggestions for offering 'uninstall' products help



I revealed last week that MicroHelp Inc. of Mari-

etta, Ga., sent letters from its law firm threatening to sue shareware companies that use the word "uninstall" in the name of their products. (See "Controversy heats up as MicroHelp claims it owns 'uninstall,'" August 15, page 26.) That is, they would sue if MicroHelp were successful in obtaining a trademark registration from the U.S. government for the word "uninstall," which is not at all certain.

I reported that MicroHelp had targeted two small shareware products: Uninstall for Windows from It's Your Money Inc. of Mt. Arlington, N.J., and Rosenthal Uninstall from Rosenthal Engineering of San Luis Obispo, Calif.

I subsequently found, however, that a third company has been threatened: Landmark Research International Corp. of Clearwater, Fla. Landmark is primarily known for such retail products as WinProbe and DOS for Windows. But the company also makes a product called Un-install-it, which is another target of MicroHelp's letters.

I ran out of space last week before describing what you can do about this situation. Here are some suggestions:

- If you have information about the term "uninstall" being used before MicroHelp's first claim in 1992, send it to Jesse Marshall, Assistant Commissioner of Trademarks, U.S. Patent & Trademark Office, 2500 Crystal Drive, Arlington, VA 22202. Merely stating your opinion is not as beneficial as sending copies from magazine articles, computer dictionaries, and the like. Please also fax a copy to me or send a description via E-mail.

- Purchase an evaluation copy of affected uninstall products. Uninstall for Windows is available for \$19 (including shipping) by calling (201) 663-4577 (press 2 when voice mail picks up). MasterCard, Visa, and Fortune 500 purchase orders are accepted.

Rosenthal Uninstall is available by sending \$22.45 (including shipping) in a check or money order to Rosenthal Engineering, P.O. Box 1650, San Luis Obispo, CA 93406. Landmark Un-install-it is a \$69 retail program shipping August

31. Call Landmark at (800) 683-6696 or (813) 443-1331 to order, or call the dealer nearest you.

## BEAM ME UP

I've received pieces of a script from one of the "lost episodes" of *Star Trek: The Next Generation*. These excerpts have been anonymously marking the rounds of the Internet. This bit of dialog may help explain why the beta version of Chicago consumes more than 35 megabytes on my hard disk:

PICARD: Mr. LaForge, have you had any success with your attempts at finding a weakness in the Borg? And Mr. Data, have you been able to access their command pathways?

LAForge: Yes, Captain. In fact, we found the answer by searching through our archives on late 20th-century computing technology.

(LaForge presses a key, and a logo appears on the computer screen.)

RIKER (looks puzzled): What the hell is "Microsoft"?

DATA (turns to answer): Allow me to explain. We will send this program, for some reason called "Windows," through the Borg command pathways. Once inside their root command unit, it will begin consuming system resources at an unstoppable rate.

PICARD: But the Borg have the ability to adapt. Won't they alter their processing systems to increase their storage capacity?

DATA: Yes, Captain. But when Windows detects this, it creates a new version of itself known as an "upgrade." The use of resources increases exponentially with each iteration. The Borg will not be able to adapt quickly enough. Eventually, all of their processing ability will be taken over and none will be available for their normal operational functions.

PICARD: Excellent work. This is even better than that "unsolvable geometric shape" idea.

Brian Livingston is the author of *Windows 3.1 Secrets and More Windows Secrets*, and co-author of *Windows Gizmos (IDG Books)*. Send tips to [brian\\_livingston@infoworld.com](mailto:brian_livingston@infoworld.com) or fax: (206) 282-1248.



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that come with external modem servers.

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## NEWS / HARDWARE

## PIPELINE

## SHIPPING

## ALR marks 10 years with Evolution PCs

Advanced Logic Research Inc. is celebrating its 10-year anniversary with a new line of systems. The Evolution XPC line comes with either a 486DX/66 or a 90-MHz Pentium processor and ranges in price from \$1,495 for a bare-bones 486-based system to \$3,395. A standard configuration would include the 90-MHz Pentium processor, 8MB of RAM, 420MB hard drive, CD-ROM drive, PCI, and 64-bit graphics controller for \$2,995. (714) 581-6770.

ATI Technologies Inc. this week started shipping a high-performance 64-bit accelerator card for \$369. The Winturbo comes with 2MB of video RAM (VRAM) and can display 16.7 million colors at a resolution of 800 by 600, according to the company. It offers a maximum resolution of 1,280 by 1,024. Versions are available for PCI and VESA local buses. (905) 882-2600.

A notebook from Advanced Digital Systems features a sound chip and VESA local bus graphics. The ADS Portable Series notebooks will be available with various 486 processors, from a 33-MHz 486SX through a 486DX/66. Hard drives range from 200MB to 520MB in size. Pricing begins at \$2,925. (617) 890-0330.

## ANNOUNCED

## Utility quadruples

**CD-ROM throughput**  
Ballard Synergy Corp. has released 4-Time 10, a CD-ROM accelerator designed to make a CD-ROM drive as fast as a hard disk drive. Priced at \$65, 4-Time 10 is available for DOS and Windows applications. On first access, 4-Time 10 stores data on both the disk drive and in system RAM, allowing subsequent reads at a higher data transfer rate than the 300KBps CD-ROM speed. (206) 692-9660.

**Western Digital Corp.** This week announced 64-bit graphics accelerator cards for PCI and VESA. With 3MB of DRAM, the Paradise Bahamas boards list for \$229 and support resolutions as high as 1,280 by 1,024 with 256 colors and a refresh rate of 60 hertz. For \$299, a 2MB Bahamas board supports resolutions as high as 1,600 by 1,200. PCI versions will start shipping this month; VESA Local Bus cards are due next month. (714) 932-5000.

## ALR ships RAID subsystem

DataStation monitors drives for EISA-based servers

BY BOB FRANCIS

Advanced Logic Research Inc. is now shipping the DataStation RAID storage subsystem for its line of EISA-based servers and multiprocessor systems.



ALR's \$6,995 DataStation RAID system can accommodate 5 gigabytes of storage.

The DataStation provides support for fault-tolerant redundant array of inexpensive drives (RAID) Levels 0, 1, and 5 and as many as six 1-gigabyte hard disks.

The system also supports drives for NetWare, UnixWare, SCO Unix, USL Unix, OS/2, Windows NT and NT Advanced Server, and Banyan Vines.

DataStation is housed in a small-footprint chassis that holds the six modular disk drives. If one of the drives goes bad, users can replace it with a spare drive without shutting down the system, according to the company.

With the six 1-

gigabyte drives, DataStation has a 5-gigabyte capacity; one of the drives is reserved for use as the hot-swappable spare.

The system monitors the disk drives and other components, such as the controller, fans, and power supplies, so that when a problem occurs the alert system notifies the system administrator.

Standard features on the \$6,995 DataStation include three 1-gigabyte Fast SCSI-2 drives, a SCSI disk caching array controller with 4MB of cache, load-sharing redundant power supplies, redundant cooling fans, a RAID software management utility, drives, cables, and a three-year warranty, the company said.

Additional 1-gigabyte drives are available for \$795. Later this year 2-gigabyte and 4-gigabyte drives will be available, ALR officials said.

Based in Irvine, Calif., ALR can be reached at (714) 581-6770.

## BellSouth PDA targets cellular users

But Simon's high price could scare off buyers

BY YVONNE L. LEE

BellSouth Cellular Corp. is shipping its Simon personal digital assistant (PDA), which has a heavy emphasis on cellular communications, but its high price is expected to keep sales low.

Simon, which shipped last week in BellSouth's telephone services markets, will have a retail price of \$899, including cellular service activation.

In addition to the cellular phone service, Simon will offer users fax, paging, E-mail, notepad, and personal information management (PIM) capabilities.

Whether that combination is enough to make Simon a success remains to be seen.

Apple Computer Inc. has scaled back its plans to mass market its Newton MessagePad as a consumer product and is now focusing on traditional vertical markets for hand-held devices.

Compaq Computer Corp., which announced plans for a PDA last year, has de-emphasized the program, citing a lack

of market potential. Compaq now won't introduce a hand-held system until next year.

Simon's main competition is expected to be other cellular phones, an area where it is at a price disadvantage, said Richard Shaffer, editor and publisher of *Computer Letter*, a newsletter based in New York.

Cellular phones are something many services virtually give away when users sign up for cellular service, Shaffer said.

Simon's 18-ounce weight and limited battery life would also put it at a disadvantage against other cellular phone providers, according to Shaffer.

Still, the IBM-developed device will fare better than other integrated hand-held devices because of its intuitive design, Shaffer added.

"It does what it's supposed to do better than the Newton [MessagePad] and other PDAs,"

Shaffer said.

Users won't be able to use the phone and take notes at the same time, which might hamper sales, noted Pieter Hartsook, editor of *The Hartsook Letter*, in Alameda, Calif.

BellSouth is located in Atlanta and can be reached at (800) 746-6672.



BellSouth is focusing primarily on communications features with its \$899 Simon PDA.

## Motorola to aid PowerPC developers

BY TOM QUINLAN

In an effort to make it as easy as possible for manufacturers to jump on the PowerPC bandwagon, Motorola has rolled out its PowerPC Developers Program.

The program will give system manufacturers access to inexpensive evaluation and manufacturing kits that will include all the information manufacturers need to design a PowerPC 601, 603, or 604 system, Motorola executives said.

The total cost of both kits is \$75, with the evaluation kit available now. The manufacturing kit will be available in October, when Motorola will also begin shipping "loner" systems to manufacturers free of charge.

The loner system can act as a reference design for implementing a PCI and ISA bus system on the PowerPC, making it easier for manufacturers to develop PowerPC-based systems.

With the exception of an on-board logic analyzer that's included as part of the loner system, it is to be manufactured and distributed by Renly Corp. — "manufacturers could just copy the board's existing design and have a system complete with everything they need," said Jeff Nutt, manager of PowerPC marketing alliances for Motorola's RISC microprocessor and memory division.

Using Motorola's PCI chip, the system is capable of supporting as many as three PCI slots, as well as an on-board local bus-based SCSI interface and graphics adapter.

The MPC105 PCI chip includes a secondary cache controller that can also be used to manage a second PowerPC processor, Nutt said.

The PCI to ISA bridge chip, the MPC105, will be available in production volumes in November and can run at 66 MHz.

A 66-MHz PCI specification has been developed by a number of companies — including IBM, Apple Computer Inc., and Intel Corp. — but it still hasn't been approved by the PCI Special Interest Group (SIG), which sets the standard for PCI, said Joey Tsai, a product manager for Motorola's RISC group.

Until the PCI SIG certifies a 66-MHz standard, Motorola will position the MPC105 primarily as a 33-MHz chip, Tsai added.

— *Cate Corcoran contributed to this story.*

## Two monitor makers update their large-screen models

BY CATE CORCORAN

Two monitor makers this month updated their large-screen offerings with new models.

The upgrades include a low-cost 17-inch monitor from Nokia Display Products Inc. that is aimed primarily at mainstream business users.

Nokia's 17-inch Valuegraph

447L lists for \$695.

In addition to its business-user focus, the monitor is designed to be multimedia ready, as it comes with built-in speakers for audio and multimedia applications. The speakers are mounted inside the monitor casing and are invisible to the user.

The system also comes with a headphone jack.

The Valuegraph display is scheduled to ship in September and will offer resolutions as high as 1,024 by 768 with a refresh rate of 75 hertz. It also features a .28mm dot pitch, according to the company.

Monitor controls, including speaker volume and some of the display controls, are located on the front panel of

the monitor.

The display is aimed at business users who want to upgrade from their standard 14-inch PC monitors to improve their viewing of Windows applications, Nokia said.

The company will continue to ship a more expensive 17-inch display that features a Trinitron CRT and support for higher resolutions to meet the needs of graphics users.

For users who want higher resolutions in the same size monitor, Tatung Co. of America Inc. is now shipping a 17-inch monitor with support for resolutions as high as 1,600 by 1,280 with a refresh rate of 60 hertz.

Tatung's CM17MKR multisync monitor can also support a refresh rate of 76 hertz at a resolution of 1,280 by 1,024.

The CM17MKR lists for \$995 and uses a flat square tube with an Invar shadow mask for color accuracy. The monitor's dot pitch is .26mm.

Tatung is also shipping a larger version of the monitor with a

### InfoWorld Street Prices

#### External CD-ROM drives

Double-speed drive	Access time (milliseconds)	Low	High	Average
AppleCD 300	295	\$329	\$399	\$359
Chiron CDX-535	220	\$389	\$489	\$416
Media Vision Reno	180	\$275	\$300	\$286
MicroSolutions Backpack	250	\$349	\$389	\$374
Panasonic CR-562	320	\$135	\$199	\$160
Plextor DM-5028 <sup>1</sup>	240	\$329	\$419	\$369
Sony CDU-7811	295	\$419	\$449	\$432
TEAC CD-50 <sup>1</sup>	265	\$279	\$349	\$317
Toshiba XM-3401E <sup>1</sup>	200	\$358	\$499	\$417

InfoWorld street prices are based on telephone surveys of resellers and print advertising in computer publications and regional newspapers. Price information was collected between August 7 and August 13.

<sup>1</sup>Street price does not include controller card.

20-inch screen.

This display lists for \$1,799 and also offers a resolution of 1,600 by 1,280 with a 60-hertz refresh rate. The monitor offers a dot pitch of .31mm and also features the Invar shadow mask technology.

Both monitors come with an LED that continuously describes the monitor's mode, horizontal frequency, and image position.

Digital controls on the front

bezel let users adjust for zoom, horizontal and vertical positioning, brightness, and contrast, the company said.

The Tatung monitors are designed to work with PCs, Macs, and workstations from a variety of manufacturers.

Nokia is located in Sausalito, Calif., and can be reached at (415) 331-0322.

Tatung, in Long Beach, Calif., can be reached at (310) 637-2105.



Nokia's 17-inch Valuegraph offers users a resolution of 1,024 by 768 for \$695.

# Now the #1 desktop TCP/IP gets you on the Internet free.



## Lexmark offers 600-dpi laser printer, color inkjet

BY YVONNE L. LEE

Lexmark International Inc. has started shipping a 600-dpi laser printer and a color inkjet printer, both of which are targeted toward price-conscious buyers.

The ValueWriter 600 laser printer has an anticipated street price of \$849. It is designed to compete with Hewlett-Packard Co.'s LaserJet 4P.

Like the LaserJet 4P, the ValueWriter 600 prints at 600 dpi and emulates HP's PCL-5 printer control language. But Lexmark is touting a faster print speed—5 pages per minute (ppm) compared to the 4 ppm

of the HP printer.

The ValueWriter's memory capacity is less than that of the LaserJet 4P. It comes with 1MB of RAM, which can be expanded to 5MB, while the LaserJet 4P ships with 2MB that can be expanded to 20MB.

The ValueWriter 600 ships with 13 scalable fonts and 14 bit-mapped fonts.

It holds 150 sheets in its main tray but can hold 250 more in an optional secondary tray.

The other new Lexmark printer is a color inkjet with an anticipated street price of \$350. The ExecJet IIc's color cartridge will print approximately 200 pages at 15 percent coverage and its black cartridge will print approximately 1,000 pages at 5 percent coverage, the Lexington, Ky.-based company said.

The printer can handle paper sizes ranging from 3 by 5 inches to 9 by 14 inches. It has 12 resident scalable fonts and offers additional font storage by way of 256KB and 1MB flash font storage as well as a 256KB RAM font memory option.

Lexmark is at (800) 358-5835.



Lexmark's ExecJet IIc offers color printing and 12 fonts at an expected price of \$350.

## Gateway enhances systems

Pentium models add multimedia, larger IDE drives

BY BOB FRANCIS

Gateway 2000 Inc. is adding multimedia kits and larger-capacity IDE hard drives to its standard Pentium systems, company officials said.

Many of the new features are being added without an increase in price, the company added.

For instance, Gateway's P5-90XL, the high-end 90-MHz Pentium system priced at \$3,974, will now come with a 1-gigabyte IDE hard drive. Previously, the standard drive was a 540MB model.

The system will also now include an Ensoniq Soundscape wavetable synthesis sound card and ACS-31 speakers.

In addition to these new features, the P5-90XL comes standard with 16MB of RAM, 256KB cache, CD-ROM drive, ATI Mach 64 video card, and 17-inch monitor.

Gateway's lower-end 90-MHz



Gateway is adding a little multimedia muscle to its P5-90XL with a sound card, speakers, and a 1-gigabyte hard drive.

Pentium-based system, the P5-90, will now include a 730MB disk drive as a standard feature, replacing the system's 540MB drive.

Additional features include a fax/modem, 16-bit sound card, and speakers. The \$2,999 system ships with 8MB of RAM, CD-ROM drive, local bus video card, and 15-inch monitor.

The North Sioux City, S.D., company is also offering its 60-

MHz Pentium-based P5-60 system in a new \$2,499 configuration that includes a fax/modem, 16-bit sound card, and speakers.

The P5-60 system without those features is now priced at \$2,299, a \$200 drop from its previous price.

Both systems ship with 8MB of RAM, 540MB hard drive, CD-ROM drive, local bus video card, and 15-inch monitor.

Gateway is at (800) 846-2080.



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## Product Spotlight

## AT&amp;T announces Pentium PC



AT&T's Global Information Systems (GIS) unit has introduced a high-end PC based on the 90-MHz Pentium. A standard Globallyst 600 system configuration includes a PCI local bus, 8MB of RAM, a 340MB hard drive, a graphics controller with 2MB of RAM, DOS, and Windows, for an estimated street price of \$3,618. The IDE and graphics controllers are supported by PCI, the company said. Options include four PCMCIA slots that can accommodate Type I, II, and III cards and a Fast SCSI-2 controller. AT&T also introduced a 486-based system that can accommodate processors ranging from a 33-MHz 486SX to a 100-MHz IntelDX4. A system with a 486DX2/66, 8MB of RAM, a 270MB hard drive, and the PCI bus architecture is expected to sell for \$2,025. AT&T's GIS division, in Dayton, Ohio, is at (800) 637-2600.

## Zeos to offer 486 notebook

Zeos International Ltd. earlier this month introduced a 486-based subnotebook that weighs less than 4 pounds.

The 3.9-pound Meridian 400, scheduled to ship later this month, will be available with a 33-MHz 486SX, 486DX2/50, or 100-MHz IntelDX4 processor. Prices will start at \$1,995 for the 486SX-based model.

The entry-level subnotebook will ship without a floppy drive,

but an optional external drive will be \$99. The basic model will also have a 175MB hard drive and 4MB of RAM.

Higher end systems will be equipped with a larger 350MB hard drive and an external floppy drive. The systems also come with Windows for Workgroups 3.11 and Lotus Organizer, the company said.

The Meridian 400 subnotebooks sport a 7.8-inch passive

matrix display with local bus video and 1MB of video RAM.

The computer's two Type II PCMCIA slots are not stacked, so users cannot use Type III devices, such as hard drives. They can use two cards, such as an Ethernet adapter and modem card, simultaneously.

Zeos, based in Minneapolis, can be reached at (800) 423-5891.

—Yvonne L. Lee

## Five graphics accelerators readied

BY CATE CORCORAN

Technology Works Inc. last week announced five graphics accelerator boards ranging in price from \$199 to \$269.

For users with VESA Local Bus systems, TechWorks is now shipping the ThunderBoltVL2 for \$269. Configured with 2MB of DRAM, the board offers a maximum resolution of 1,024 by 1,024 with 256 colors.

TechWorks has based another board on the same chip for users with PCI systems. The

ThunderBoltPro2 will work with a 64-bit PCI slot and offers the same resolutions and performance as the ThunderBoltVL2. It will ship in October, but its price has not been set.

For VL Bus users who prefer a lower-cost card, TechWorks next month will start shipping the ThunderBoltVLT2 for \$199.

This board uses a 32-bit chip and 2MB of DRAM to offer resolutions as high as 1,024 by 768 with 256 colors.

A similar board for owners of PCI systems will start shipping

this month. The 32-bit ThunderBoltPCIT2 lists for \$199. It comes with 2MB of DRAM and offers resolutions as high as 1,024 by 768 with 256 colors.

The ThunderBoltISA accelerator card for ISA-based systems with 1MB of DRAM costs \$199. It is based on a 16-bit controller and offers resolutions as high as 1,152 by 900 with 16 colors.

All of the boards support 16.7 million colors at a resolution of 640 by 480.

TechWorks, in Austin, Texas, is at (800) 324-2171.

Model 14050L - 14" monitor,  
96-254 VAC, non-glass

Model 1520 - 15" TFT, auto-scan,  
MPS II, 96-254 VAC, digital control







Help Desk / Brett Glass

## Complex repairs make warranties critical for your monitors

**Q**I know how to swap out boards and perform upgrades, but when it comes to monitors, I'm baffled. If a monitor stops working, I don't know of any diagnostic program that can find the problem. All I can do is swap out the video card to see if that helps. Last week, the image on one of our monitors started shaking. Today, another suddenly became very bright, and the picture shrunk. What do I do about monitors in your work environment? I feel terrible recommending that we junk an item that's only one or two years old.

Paul Konstant

**A**Unlike most computer components, monitors are mostly analog (not digital) and don't have easily replaceable parts. There's no diagnostic program that can pinpoint the problem. And it's very dangerous for an amateur to go poking around inside a monitor. The tube remains charged at tens of thousands of volts even after it's turned off. Even experienced professionals find monitors difficult and expensive to service; they usually just swap boards or exchange the whole unit when something goes wrong.

Video display repairs and exchanges are costly, so the length of the warranty on a monitor is much more important

than it is for other components. Insist on a parts and labor warranty that lasts at least three years, and consider buying the monitor with a credit card that gives you a free extended warranty. (I don't recommend dealers' extended warranties; they're usually outrageously expensive.) If the unit is under warranty, you can usually get an exchange on the spot—which is what you need if your business relies on it.

to indicate that an 8mm tape drive has run for the maximum recommended number of hours between cleanings. To stop the flashing (and ensure that your drive will continue to work properly), clean the drive with a cleaning cartridge. I know of only two vendors that make 8mm cleaning cartridges: Exabyte and Sony (I can't tell you which is preferable because I haven't tested them yet). Unfortunately, because 8mm drives aren't as

Standards and Technology's atomic clock in Boulder, Colo. There are several shareware programs that use a modem to call the clock; they're accurate to within thousandths of a second.

Anonymous

**A**I scanned CompuServe for software that might do the trick and found several programs: PCK300.ZIP, TIME\_S.ZIP, TSET72.ZIP, and TIMESY.ZIP—all shareware for DOS—are located in Data Library 1 of the IBMSYS forum. SETTIM.ZIP, for Windows, is in Data Library 3 of the WinShare forum. If you want the source code for a time-setting program, download NISTSY.ZIP, a program for PowerBasic Inc.'s PowerBasic, in Data Library 12 of the PCVENB forum. SETTIM.ZIP, for Visual Basic, is in Data Library 5 of the MSBasic forum. If you use a communications program such as DataStorm Technologies Inc.'s ProComm, you may be able to use a script written in that product's scripting language. DataStorm's CompuServe forum has two for ProComm: DOSTIM.EXE (for DOS) in Data Library 6 and SETTIME.EXE (for Windows) in Data Library 10.

Brett Glass' Help Desk answers readers' business computing questions. Readers can leave queries by calling (800) 227-8365, ext. 702, or by messaging CompuServe at 72267,3673.

### Even experienced professionals find monitors difficult and expensive to service; they usually just swap boards or exchange the whole unit.

**Q**We use an 8mm tape drive to back up our 1-gigabyte hard disk. Recently, the green and yellow lights on the front of the drive have started to flash incessantly. It doesn't hurt the operation of the drive, but it certainly is annoying! What does the flashing mean, and how do we get it to stop?

Samuel Pickholz

**A**Exabyte Corp. and Tallgrass Technologies Corp. (now a subsidiary of Exabyte) use flashing front-panel lights

common as quarter-inch-cartridge (QIC) drives, even the big computer stores such as CompUSA rarely carry them. You may need to order a cleaning cartridge through a mail-order company or place a special order with a dealer.

**Q**In a recent column, you mentioned programs that can synchronize computer clocks across a network. (See "Synchronize system clocks with remote LAN access products," July 25, page 42.) Another way to solve the problem is to use a utility that calls the National Institute of

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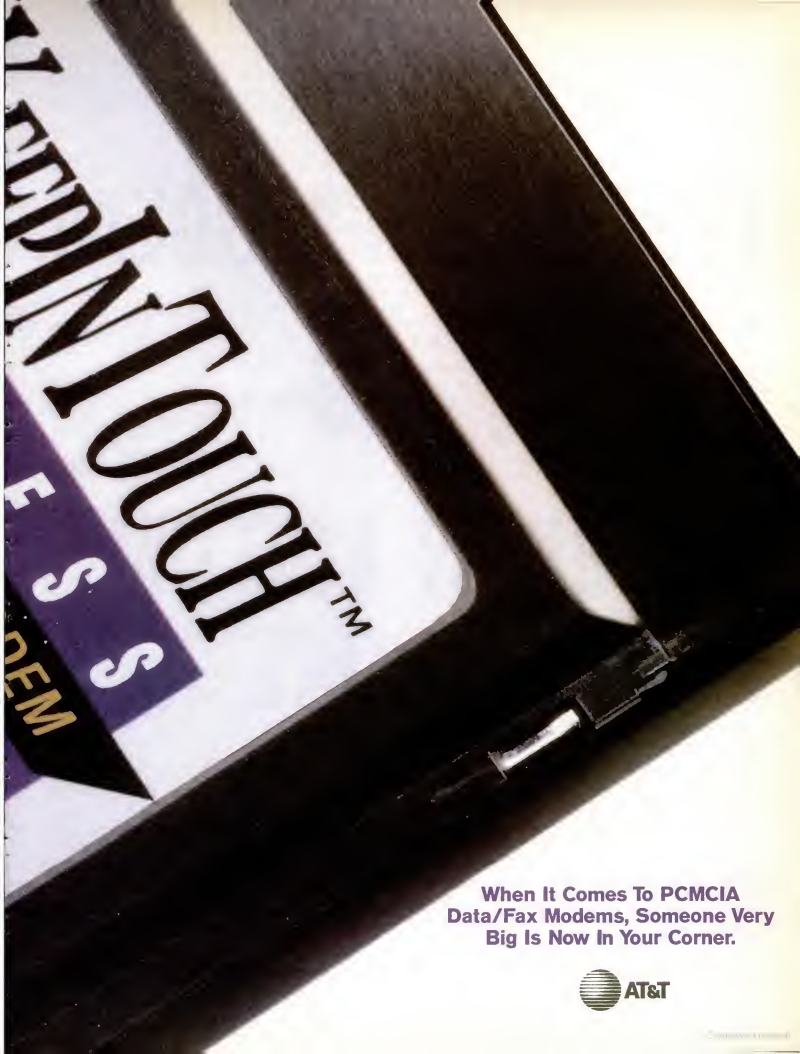
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# Remote access simplified

CommVision bundles servers with NetWare

BY DOUG VAN KIRK

CommVision Corp. is the latest company to offer overstretched LAN managers a way to more easily hook their remote users.

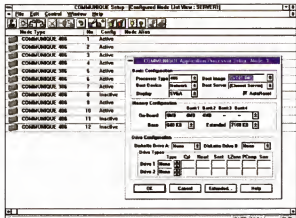
CommVision this month will add simple-to-use base models to its Communique line of remote communications servers, said CommVision director of marketing Claude Ezran.

Communique Connect Server, priced at \$6,995, supports modem pooling and remote node dial-in from DOS, Windows, and Macintosh clients, as well as dial-out from DOS and Windows clients.

It comes with NetWare Runtime and NetWare Connect installed and configured, and it will support four to 64 phone lines.

Communique Remote Control Server provides each remote control dial-in user with a dedicated application processor or expansion card.

This architecture also lets the product run third-party E-mail or fax server software in addition to the company's own remote node and remote control



Communique's new setup utility lets administrators control configuration of each application processor.

software, for example.

The expansion cards are linked together by a packet-switching backplane, which the company claims reduces network traffic by providing a unified gateway for all communications services.

The Communique Remote Control Server package substitutes Ocean Isle Software Inc.'s ReachOut software and supports four, eight, or 16 phone lines. The four-line system costs \$12,995.

Separately, CommVision announced it has added SNMP capabilities to its Communique products and revised the instal-

lation and setup routines for its communications server.

According to the company, the packet-switching driver that links the Communique platform to its application processors can now trap events and error conditions and pass this information on to any SNMP management console.

These events include timeouts and hardware failures. CommVision also supplies a Management Information Base (MIB) so that such events can be shown in context.

CommVision is based in Mountain View, Calif., and can be reached at (415) 254-5720.

# Chameleon now works with wireless modem

BY KAREN RODRIGUEZ

Users who want to access data from their corporate networks or the Internet may soon be able to do so without going through the telephone network.

NetManage Inc. has optimized its Chameleon communications software to run on Metricom Inc.'s wireless modem, providing Chameleon with its first wireless support.

Chameleon 4.01 gives users SMTP mail with multimedia MIME attachments, File Transfer Protocol (FTP), and Telnet and 3270 terminal emulation. It also includes an Internet news reader; a Gopher client; and Internet navigation utilities such as Whois (user name directory), Finger (a list of active users on another Internet host), and PING (Packet Internet Groper, which monitors successful Internet sessions and connections).

"With the speeds offered by Metricom's modems, you have remote access that is compatible to dial-up access without using the phone line," said Fritz Mueller, Chameleon product manager. "You basically have a second phone line in your house."

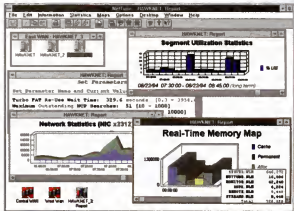
Metricom's modem, which is specifically tuned to its Ricochet MicroCellular Data Network (MCDN), uses packet-switched radio technology. The \$499-modem operates within the unlicensed 902-MHz-to-928-MHz bandwidth, with transmissions ranging from 4.8Kbps to 38.4Kbps without compression, or about twice as fast as Cellular Digital Packet Data (CDPD) at 19.2Kbps. MCDN, slated for nationwide deployment by 1997, is based on the Hayes AT modem command set and supports the point-to-point protocol (PPP) for Internet access. The wireless option is available only in the San Francisco Bay area until year's end, after which time Seattle, Houston, and Boston will be added.

Chameleon 4.01 costs \$400. Internet Chameleon is \$199. Chameleon 4.0 users on a maintenance program receive a free upgrade. Pricing for the Metricom network is based on connection speed: \$2.95 for 4.8Kbps and \$29.95 for the full 38.4Kbps transmission speed.

NetManage is in Cupertino, Calif., (408) 973-7171. Metricom is in Los Gatos, Calif., at (408) 399-8200.

## Product Spotlight

# NetWare tool charts more data



This month HawkNet Inc. ships the first major upgrade of its NetWare network reporting and monitoring software for NetWare.

NetTune 2.0, priced at \$695 per server, now watches and reports on more than 140 categories of network resources, up from five in the last version. Managers can look much deeper than just disk space and available memory; the new version lets them chart the number of pending disk I/Os, transactions and performance of LAN segments, and individual statistics for each volume or LAN card.

NetTune also categorizes the data into a dozen statistical classes. This depth of information has not been available for NetWare 3.x, even with Novell Inc.'s Monitor NetWare Loadable Module (NLM). HawkNet officials said. This kind of data is particularly useful for network load balancing.

NetTune 2.0 also comes with a memory mapping capability that tracks the entire RAM footprint of an NLM, to help prevent performance bottlenecks. NetTune runs as an NLM and on NetWare clients as a Windows application.

HawkNet, in Carlsbad, Calif., is at (800) 429-5638.

# HP opens OpenView to third parties

ISVs can now leverage database repository via APIs

BY MARTIN LA MONICA

ORLANDO, Fla. — Hewlett-Packard Co. is taking steps to increase the number of third-party applications for its OpenView network management platform.

Specifically, HP released a database repository schema for OpenView at its OpenView Forum user meeting held here earlier this month. The schema defines fields in which information, such as asset inventory data, is stored in a relational database.

The repository will be integrated into the platform for access by other OpenView applications.

The plan means that ISVs will write applications to a series of OpenView APIs, rather than writing to HP's proprietary flat-file database currently in OpenView. Moreover, a common repository will eliminate the need for third parties to conduct their own data gathering.

"The event handling, topology, and configuration informa-

tion will be stored in a single place," said Gordon MacKinney, OpenView program manager. "The first step is to define a set of tables with fields and read/write privileges."

HP plans to integrate the repository in the major release following OpenView 4.x, code-named Tornado, which is slated for release by next summer. (See "Data control gets boost in OpenView," August 15, page 6.)

The repository will run on top of relational databases such as Ingres, Sybase, Informix, and Oracle, MacKinney said.

HP hammered out the initial definitions with 15 ISVs and large customers. Developers were enthusiastic about the plan.

"If I can read data from other vendors' applications, like Legend's trouble ticketing, I don't have to [write my own data capture function]," said Alan Graves, marketing manager at Accugraph Corp., maker of network mapping applications for OpenView.

Users, however, insisted that HP expand its partner base to other networking vendors and end-users to establish a lasting and realistic standard.

"For the consortium to start from scratch is foolhardy," said David Myers, telecommunications specialist at Chrysler Corp. "We've sorted through a lot of problems with our internal repository system, and we can bring a lot to the table," Myers added.

Users also support the Management Integration Consortium (MIC), a group of vendors and users — including HP, Sun Microsystems Inc., and IBM — formed to take on management application integration.

MIC is considering HP's repository as a standard, and it expects to have a specification within a few months.

HP, in Roseville, Calif., is at (800) 533-1333. MIC can be reached on the Internet at [mic@hp.com](http://mic@hp.com).

Martin LaMonica is a correspondent for the IDG News Service.



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## Market Spotlight

## LAN standards should spur EDI growth

Electronic Data Interchange, an international standard for electronically exchanging business documents, such as insurance claim forms and shipping manifests, is poised to more tightly embrace desktop and LAN-based systems, according to a recent study.

As a result, the slow-take-off EDI technology could grow to a billion-dollar-plus market by 1998, says market research firm BIS Strategic Decisions.

BIS expects nearly all of the growth (from \$410 million in 1993) to occur in desktop and LAN-based EDI. BIS predicts that 75 percent of EDI software will run on Unix and microcomputers by 1998. In the past, only large firms could afford the needed investments for implementing and maintaining frame-based EDI. As desktop EDI emerges with LAN-based transaction processing systems, more firms will be able to conduct business electronically. (617) 982-9500.

## Electronic commerce market

Projected revenues in millions of dollars



SOURCE: BIS STRATEGIC DECISIONS

## Network Curmudgeon / David Strom

## Got a new assignment: Testing products on-site

It's getting harder and harder to test network products

for a living. Like you, I've found this out the hard way, through my own experience. So, in thinking about how I could be more helpful, the *InfoWorld* editors and I have come up with some changes in my responsibilities. More on that soon.

Back to the problem of testing network products: They are complex, requiring a lot of time to install, configure, obtain the latest patches and fixes from the vendor, and assemble the right configuration. You never have the latest release of drivers, and there is always some BBS to call to download stuff and get it tweaked. You are always falling behind on the upgrade path. Try keeping up to date on the latest versions of NetWare, OS/2, Windows, or even DOS. Who has the time?

Another part of the problem is that to do it right, you always need more gear than you have. There are never enough machines to go around; you always need another network segment, another router, or several PC workstations to try something out properly. You don't necessarily want to test a new file server on your production backbone, so that means creating a separate one for testing.

Another part of the problem is that no matter how hard you try to test things ahead of time, there is no assurance that you'll be able to duplicate the real-world environment in which these products are used. You try your best, but you can't anticipate everything. So sometimes you put test equipment on your backbone and hope and pray that this doesn't become career limiting and that the rest of your network stays safe and sane.

Sound familiar? If so, I'd like to help in what goes beyond the scope of writing a column. Starting with the September issue, I'll be writing a new column—I'll still be called Network Curmudgeon—but in addition, I'll be testing products at your sites and reporting back to you on my experiences. The column will move

from the Networking section to Enterprise Computing. This will be my last Curmudgeon column in Networking.

Here's how my new job will work. If you're an end-user and interested in having your operation serve as one of my test sites, send me a short E-mail message describing what products you are interested in testing and the kind of network you have. I'll see if we can schedule something. You'll get to keep the equipment and have me around for a few days while I test the stuff on your premises. The cost will be some of your time to help get things set up. If you don't want your company's name used, that's fine. Obviously it makes for a better story if I can identify you, but I won't insist on it.

If you are a vendor, you'll agree to send your product to me for this effort. It must be a shipping version and include all the various options and extras that the site requires to do the tests. Also, you must include at least 90 days of free, unlimited technical support. After that date, if the end-user site wants to keep the product around, you'll have to negotiate a support plan directly with it.

I'll be picking the products based on what's new and what's of interest to the end-user sites. "Interest" can be broadly defined from just mild curiosity to something that the site is actively evaluating for ultimate production use. I intend to focus mainly on network applications and infrastructure products but may look at other areas as well.

My reports will appear weekly, but I won't be writing about a different product every week. For each product, I'll talk about the environment that I'm using, some of the issues involved, some of the competing products that may do similar things, and finally, the results of the tests themselves. See you September 12.

David Strom is president of his own consulting firm in Port Washington, N.Y. He can be reached via eWorld at [dstrom@world.com](mailto:dstrom@world.com).

## Microcom eases remote link

BY BOB WALLACE

Microcom Inc. is upgrading its all-in-one software/hardware package that provides everything a manager needs to build an end-to-end remote-access solution for far-flung users.

The improved LANexpress Remote 2.0 pack, priced starting at less than \$4,000, includes easier-to-install remote software, improved network management, user security, and a communications server that comes with two built-in 28.8Kbps modems and supports as many as 12 Ethernet or Token Ring ports.

Specifically, the LANexpress software upgrade lets Windows and DOS users automatically configure the package for a variety of network operating systems, including NetWare, IBM's LAN Manager, or Microsoft Corp.'s Windows for Workgroup and Windows NT Server.

Unlike previous versions, LANexpress 2.0 loads with only one disk, and users are prompted to answer far fewer questions to configure the units, said Kelly McGovern, Microcom product manager for remote LAN access products.

On the server side, Microcom has reduced the number of disks needed for loading from five to three. In addition, LANexpress 2.0 dynamically assigns addresses on a per-port basis so remote addresses don't have to be configured manually.

Also added for the first time to the

package is Security Dynamics Inc.'s SecureID. The security access add-on offers a higher level of security by requiring users to match a passcode to a card that displays a different passcode every minute.

Analysts liked the changes.

"These enhancements keep Microcom up with the leaders of the pack," said Jay Batson of Forrester Research, a Cambridge, Mass., consultancy. "And users will be enamored of the ease-of-use changes."

Microcom's LANexpress server can support from two to 12 ports or as many as 12 simultaneous remote connections. Each remote user needs a copy of the client software.

Microcom is charging \$3,499 to \$11,999, depending on the number of remote users supported.

For a limited time, Microcom will provide the client software free. Current users can upgrade to LANexpress 2.0 for \$495.

Microcom has also improved its expressWatch SNMP-based network monitoring and control system, enabling customers to manage for the first time the modems needed at the remote site and LAN location.

This benefit arises because the modems at the LAN site are built into the Microcom server, McGovern said.

Microcom, located in Norwood, Mass., can be reached at (800) 822-8224.

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From the Editor / Ed Foster

# Vendors should make on-line documentation truly complete

It's time we turn the final page on this whole issue of manual-less software.

The last few weeks we've discussed a variety of gripes about the environmentally correct efforts of vendors to include less hard-copy documentation with their products. Although it's fairly clear that the vendors are not motivated entirely by ecological concerns, we still haven't answered the basic question. Given our choice, what would we want to see the vendors do?

First off, it is indeed true that the computer business has needlessly killed a lot of trees. To prove this point, all most of us have to do is scan our own bookcases and imagine the small forest that died to produce the unopened manuals there. (And it's also a fact that all too often documentation isn't worth the paper it's printed on, but don't get me going on that subject again.)

Anything that can be done to stop wasting all that paper should be done. So the trend toward documentation going on disk, and more specifically CD-ROM, is a good thing. For most people, having the information on-line in searchable form is going to be more useful than a manual anyway.

That said, it still seems to me that there is a fundamental problem lurking beneath these gripes. Take Mr. Green and Ms. Cash (see "As Microsoft is quickly learning, it's not as easy being 'green,'" August 15, page 46) who took opposite stances on whether Microsoft should charge the same or less for Office with CD-ROM-based documentation than for the version with diskettes and manuals. In a sense though, they were really complaining



about the same thing because both were upset about what they saw as a charge for documentation.

In one form or another, complete documentation needs to be bundled free with every product. When vendors begin to consider different pricing structures for various forms of documentation, there's a danger that we'll soon have to pay for documentation — just as we now often have to pay for support.

Whether we like it or not, it's a legitimate business model for a vendor to unbundle support costs from the price of the product. If we don't like it, we should buy from vendors who offer free support, even if they charge more for their product. But I don't think it's legitimate for vendors to unbundle the cost of documentation.

Remember Max, the guy who found Lotus ScreenCam's lack of a manual so frustrating because he couldn't even get the product installed to use the on-line help? (See "Companies going 'green,' but at documentation's expense?" August 8, page 44.) In a way, his case highlights just how different the role of documentation is from technical support. As Lotus' Steve Barlow pointed out, the type of installation problems Max encountered are usually going to have to be solved by technical support folks who can get you the latest drivers, are aware of the known incompatibilities, and so on. Nobody can keep their documentation current enough to solve all those problems.

But Max's case also demonstrates what a tough spot a user can be left in when a vendor doesn't provide all the information that it can. Maybe the

driver Max needed didn't ship with the product, but some documentation for the drivers that did might have helped him figure out where his problem lay.

If support is going to cost you, whether right away or in 30 days, you at least have the right to expect the vendor to give you all the information available when the product ships. That's not the way vendors have traditionally viewed their documentation responsibilities, partly because the printing costs of truly complete manuals would be prohibitive. But because we're going to be saving trees now anyway by going to documentation on disk, that doesn't have to be an overriding factor. Abbreviated hard-copy manuals can still be provided at some reasonable price for those who want them, but let's take advantage of this tree-saving technology to give users more information.

Another reason vendors haven't traditionally attempted to provide complete documentation is that they've relied on technical support to answer customers' questions. Now that support isn't free, though, I think the vendors must take a different approach. A product shouldn't be shipped until it's ready to ship with every bit of information that could help users make it work properly.

Yes, what I'm proposing is fairly radical. But if customers demand complete documentation, I see no reason why the vendors can't deliver. Otherwise, I fear the documentation issue will be one where we'll never all be on the same page again.

Ed Foster is editor of InfoWorld. He gets E-mail at MCI account 584-3453; or call (800) 227-8365, ext. 710, to send a gripe you have with a vendor.



From the Ether / Bob Metcalfe

## Counting users isn't easy on the incredible (shrinking?!) Internet

What if the Internet were shrinking? Would anybody notice?

According to reports on the growth of the Internet, I calculate that in nine years the Internet will have three times as many users as people now living on Earth.

This could be bad news for population control or good news for extraterrestrials.

In Tokyo last month, Anthony-Rutkowski, executive director of The Internet Society, reported that the Internet has between 20 million and 30 million users.

And this month, after a survey of Internet host computers reached 3.2 million, Rutkowski calculated that in the last six months, the Internet grew at an annual rate of 100 percent to 32 million users.

Hey, I'm an Internet enthusiast, but these numbers are crazy. The *New York Times* was right when it ran a front-page story on August 10 questioning the actual number of Internet users. Could this skepticism lead to Internet backlash?

Now, Rutkowski isn't trying to fool anybody. He readily explains how Internet size estimates are made and laments

the difficulty of keeping track of a worldwide service that doesn't register its subscribers.

A weak link in Rutkowski's chain of estimates is the assumption that there are on average 10 users per Internet host computer. This is a holdover from when the Internet was made up mostly of VAX Unix hosts, each of which had many users.

Considering that most computers today are personal, the average number of users is closer to one than 10, even accounting for the few really big ones. So, the Internet might have as few as 3.2 million users.

But which Internet are we talking about? Some estimates are of the U.S. Internet; others worldwide. Some estimates include all networks running the Internet's TCP/IP protocol, many of which are not connected to the Internet.

Some estimates are of the core Internet, which includes only hosts using TCP/IP to connect to a backbone operated by the National Science Foundation, NSFnet. Other estimates are of the "matrix" Internet, which includes anybody who can exchange E-mail through Internet gateways.

The worldwide matrix Internet, which includes non-TCP/IP computers and millions of commercial on-line sub-

scribers, is the Internet with between 32 million and 3.2 million users.

Some say it does not matter whether the number is 32 million or 3.2 million: the Internet is big — NSFnet now carries 12 terabytes per month. But businesses that assume the Internet will give them access to 32 million customers might easily fail. If the 3.2 million number is too low, the Internet might grind to a halt with insufficient capacity.

At the Internet Society meeting last year in San Francisco, I heard that the Internet had 20 million users, a growth rate of 10 percent per month. At that rate, the Internet should now have 60 million users, not just 32 million.

The National Research Council recently put the Internet not at 60 million, 32 million, or even 20 million, but at 15 million users, which is down from a year ago.

Hold on, is the Internet shrinking? Probably not, but if it were, and if we really wanted to know, how would we?

Getting addresses on the Internet costs nothing — no harm in having several, even if you're not really a user. Internet addresses are running low, so maybe hoarding is inflating the numbers. A whois notices when somebody actually stops using an address?

A big problem for commercial on-line

services is how to attract subscribers — and then they have to try to keep them. Many people subscribe for a month and then go inactive or drop off entirely. This must also happen on the Internet.

The Internet is many things, and it's a fad. The novelty could be wearing off. There are many attractive alternatives to the Internet, such as America Online, CompuServe, and Prodigy, although you do have to pay for these. And maybe another reason the Internet might be shrinking is money. Various Internet subsidies are moving around, if not disappearing altogether.

If we really want to know how big the Internet is, I suggest that Rutkowski send all Internet users a bill for \$10 per month (→). The people who don't respond might be those information have-nots who worry so much about.

I say that only people who pay monthly Internet bills — using vouchers if they must — should be counted as subscribers.

Please send me suggestions on what Rutkowski should do with the \$320 million per month he might collect.

InfoWorld publisher Bob Metcalfe invented Ethernet in 1973 and founded 3Com Corp. in 1979. He receives E-mail via the Internet at bob\_metcalfe@infoworld.com.



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# TO THE EDITOR

## Sell info; collect no tolls

**O**n the subject of Interpreting (see From the Ether, August 8, page 44), I have been dubious about commercializing the Internet

—until now. Rather than placing tolls on using the net, it appears the direction is more clearly heading toward using commercial servers. That's great as far as I can tell. Damn the line charges, let's market the information!

Sounds like Steve Kirsch has outstanding technology. Technology often begins as a solution in search of a problem. In this case, the problem happily seems to be the antecedent.

May his tribe increase!  
And yours, too, Bob Metcalfe!

William E. Garber  
President  
Interlink Inc.  
Berrien Springs, Mich.

## New Jobs at Apple?

**I** just read Stewart Alsop's August 8 column: a rock (gem?) of reason in the sea of speculation. (See Distributed Thinking, page 98.) One wonders, though, if Sculley's return would liven things up at Apple, what would they be like with the return of (gasp!) Steve Jobs?

J. Brooks Breeden, Professor  
School of Architecture  
The Ohio State University  
Columbus, Ohio

## Easy as Apple pie

**I** believe David Strom may have misrepresented the difficulty of obtaining Apple software updates. (See Network Curmudgeon, August 1, page 42.) Never having experienced difficulty myself in finding Apple updates, I wondered about the validity of Strom's story of frustration.

When I read the dosing paragraphs, my suspicions were confirmed. ("I found out I needed another utility called Disk Copy...") No Mac professional is without such a standard piece of software!

Besides, a pro installing the new software would bypass Disk Copy in favor of using MountImage. That way, the dependence upon floppy disks is avoided.

Chris Adragna  
E-Systems EC Division  
St. Petersburg, Fla.

**I** read David Strom's columns faithfully in InfoWorld, mostly because it's the only source of commentary on Apple products other than that of Stewart Alsop, who used to make kind remarks now and then.

But now Strom weighs in with on-line software. I have not tried to browse the sites where he had trouble, but I would like to suggest a couple of Internet tools that might help.

I look for software in the University of Michigan archives, which maintains several mirror sites; try mac.archive.umich.edu. It's a huge warehouse of shareware and freeware, but it also

offers many Apple updates and other items.

I use Fetch to move File Transfer Protocol (FTP) files back to me; Fetch is freeware that's available at the Michigan site.

Two shareware files I recommend are Anarchie and Easy View. Anarchie is in the Internet folder and Easy View is in Text.

Anarchie lets you search worldwide on the Web for any piece of software. It will search in the background and bring up a long list of hits, with site information. You can sort, edit, clip, and save the list as a text file.

Easy View is a high-speed text browser that will trace through Text files, such as E-mail or TiDiBs, searching for specified strings that you can clip and extract into your private files.

These three tools (Fetch, Anarchie, and Easy View) should vastly improve Strom's search times on the Internet.

William Howarth  
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**"The point of computing is to have an arcane, difficult ... discipline that can be lorded over the unwashed masses."**

J. MacKenzie

## Who said this stuff was easy?

**S**tewart Alsop has complained again about the difficulty of using Windows- and/or DOS- and/or Intel-based machines. (See Distributed Thinking, August 1, page 86.) He just doesn't get it. It is supposed to be difficult. Unless we computer pros keep the ball hidden, all sorts of indiscriminate minds will have access to computers, and then where will we be?

If you don't know how to edit your AUTOEXEC.BAT to, for instance, specify which memory range your auxiliary video memory will occupy so that you can get 256 colors in Windows using your 256-color card and your Super VGA monitor, then you're obviously too ignorant to be allowed to have access to E-mail. The Windows Resource Kit should be a controlled document, sold only with government approval.

Apple clearly belongs to that small camp of people who are still changing the world one user at a time; people who think that computers should be comprehensible — or even worse, intuitive. Reliability and ease of use do not concern the real pros.

The point of computing is not to get the point. The point of computing is to have an arcane, difficult, and inconsistent discipline that can be lorded over the unwashed masses, and to allow us to remind them, whenever they succeed

with something like a Macintosh, that they are using a mere toy.

J. MacKenzie  
Fremont, Calif.

## Watching the switch

**I**'m starting by admitting my bias: I'm writing this on an Apple Duo 210. Regarding Stewart Alsop's contemplated switch from his Mac to a Windows-based solution: please do!

(See Distributed Thinking, July 11, page 110.) I want to read his column as he struggles with DOS/Windows and:

- 8-3 character file names;
- lack of built-in peer-to-peer networking; and
- that intuitive File Manager/Program Manager dichotomy and those extended, expanded, high, and UMB memory things.

Even more fun will be watching him switch to Chicago and waiting for applications to be available that overcome the above limitations.

OK — and here's the best part — when Chicago is actually done, when stable applications, drivers, and utilities are available, I'll know because Alsop will have stopped writing articles about it being unstable and lacking the tools he needs. Then I'll consider switching.

And you know what? I'll never have to name a memo MACFILE.TXT or worry about determining whether I should load my network driver in high memory — or would it fit in a UMB?

Meanwhile, Apple may have made the Mac operating system a reasonable alternative. Maybe.

Jeffrey R. Van Dyke  
Boston  
jandyke@mit.edu

## Letter redux

During the editing process, some words were inadvertently omitted from the following letter, which appeared August 1. Here is the full text. — Editors

**I** was surprised to read Stewart Alsop's column where he asked if there was a future for Apple Computer. (See Distributed Thinking, July 11, page 110.) My surprise was not what he stated but that it was he, the editor in chief, stating it. Just 30 pages earlier, InfoWorld proclaimed that a modern — perhaps the most system-independent peripheral — is required to include DOS or Windows communications software to meet minimum acceptable standards.

Perhaps his next column can be more forward and simply state that the problem with Apple, Unix, C++, or whatever, is that they are not Intel-based chips directly running Microsoft-brand DOS or Windows.

Andy Levinson  
The Institute OSM Ltd.  
Studio City, Calif.

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## ENTERPRISE COMPUTING

# Honey, did you lock the LAN?

Despite a huge collection of security tools, many NetWare LANs are still left open to intruders

BY RACHEL PARKER

Folks in the town of Booneville, Iowa, frequently leave their homes without locking the doors. Situated nearly 20 miles from Des Moines, residents feel secure that none of their neighbors would enter a home uninvited. And the town's commercial ventures — two gas stations, a bank, and a cafe — rarely lure drivers off the highway to poke around.

According to network security experts, such small-town values have pervaded LANs. But, unlike Booneville, they say these values may be out of place.

Corporate LANs hold information valuable to outsiders, even your own employees may use information to their own gain.

Consider the disaffected editor at a publishing house who replaced all the references to Jesus Christ with Allah in an encyclopedia. Or the Amsterdam bank employee who attempted to transfer \$15.1 million to a Swiss account after learning another executive's password. Or the executive who had such an aversion to passwords that she asked the LAN administrator for an account without a password. Her files — including budget and project proposals — were accessible to anyone who took the trouble to log on with her name.

Although LAN administrators cannot be responsible for the acts of angry or irrational employees, they can take a number of steps to secure the network from both internal and external intrusions. Products abound for securing LANs, from software that improves on the basic authentication and access controls in Novell Inc.'s NetWare, to hardware that provides an additional layer of authentication.

In short, there is no reason to naively let your LAN go unprotected — and every reason in the world to secure it.

**MORE FINGERS IN THE PIE.** For many years, LAN security was something of an oxymoron. Mainframe managers, accustomed to the sealed world of host-based computing, often criticized LANs for their lax security.

But in recent years, Novell and third-party vendors have plugged that security gap (although buyers may need to combine unrelated tools to fully secure their networks).

At the same time, a new problem has developed. In a truly distributed environment where users have access to multiple servers, databases, and even remote log-in



rights, security is much more complicated than any mainframe's worst nightmare.

"It took us years of trial and error to get security right on the mainframe," says Ken Cutler, vice president of the Information Security Institute, part of the MIS Training Institute in Framingham, Mass. "Now we are trying to do it all over again, but with more fingers in the pie. We've increased the complexity, and people who weren't involved in the system before are now."

Part of the additional complexity is determining what combination of tools and techniques is right for your environment.

Carl Allen, security scientist at Novell, in Provo, Utah, says security measures break down into several categories, including limitations on workstation access, improved challenge/response systems, auditing and administrative tools, encryption systems, and the newest area, single sign-on to multivendor networks.

"Customers are looking for these features [to be] more tightly integrated into NetWare," Allen adds.

**WHO ARE YOU?** NetWare has four basic types of security measures built-in: authorization, access control, audit, and assurance. The authorization level — making sure that Sam is really Sam — is the familiar user ID and password structure and is the baseline of defense in any network.

"Frankly, the authentication issue is the No. 1 thing that anyone who wants to secure a network should consider," says Dan Geer, chief scientist with OpenVision Technologies Inc., in Pleasanton, Calif. "Without it, you have no authorization controls or audit trails. No matter what the setting, the first task is to prove identity."

NetWare allows LAN administrators to select varying levels of password controls by requiring users to change passwords regularly and select passwords of a certain

length. Having users change their passwords from time to time reduces the risk that a password has been compromised. And longer passwords are harder to crack than short ones.

Yet, though this baseline of security is fundamental, many organizations are skimping on it. In a survey of 47 companies, New York-based consultancy Intrusion Detection Inc. found that 11 percent of users were not required to use passwords, and 22 percent of users had supervisory privileges, a high number considering the broad access this allows. Nearly 90 percent of the organizations did not force users to change their passwords frequently enough.

"We recommend that users change passwords every 30 days," says Robert Kane, a partner with Intrusion Detection, which specializes in security. Ideally, he adds, users won't be allowed to reuse a given password for several cycles.

But a well-designed system that adheres to strict security principles may backfire. Frequently changing passwords are difficult to remember. Although you want to discourage users from selecting very easy-to-guess passwords, you don't want to find passwords posted on sticky notes around cubicles.

"We don't try to enforce unique words. We try to balance the users' need to remember the password against the need for uniqueness," says Steven Knight, a PCLAN manager at a Fortune 500 company in Dallas. Users at his firm must change their passwords every 60 days, but Knight allows them to reuse one from a past cycle.

**RIGHTS, PRIVILEGES, ACCESS.** As networks grow and interconnect, access control becomes increasingly important. Personnel files, for example, should not be available for the entire company's perusal. Businesses working with customer information have a special need to



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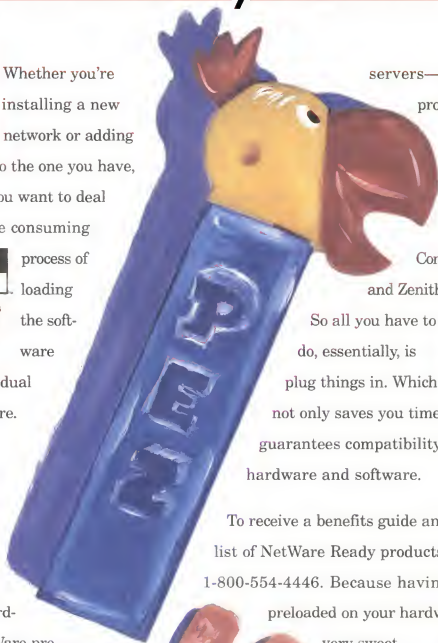
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# STEWART ALSOP

## Editor-in-Chief

**Profile:** Now in his second tenure as editor-in-chief, having held the post for 14 months in 1983–1984. In between, he founded and edited a newsletter called *P.C. Letter* and started the Agenda and Demo conferences for senior personal computer industry executives. He also earned a reputation for believing that PC products should be designed for the good of users, not the convenience of vendors. Because of that—and his tendency to share his opinions shamelessly with anyone who will listen—*InfoWorld* felt compelled to bring him back in 1991.

**Alsop on *InfoWorld's* history:** "This publication is an institution in personal computing, having started nearly 15 years ago as the *Intelligent Machines Journal*. A lot of people think it's a big stretch for *InfoWorld* to have evolved from the Silicon Valley gossip rag to a newspaper for PC systems managers. But that's the most logical thing in the world. The people who bought into personal computing in the first place are now leading the IS department's charge into networked, client-server information processing. And those same people—the ones building systems today in what we call 'The New Mainstream' of computing—have grown up with *InfoWorld*, as it reflected their evolution from hackers to power users to PC systems managers."

**On mainframes:** "A lot of people get upset when I suggest that we should be getting rid of mainframes. Maybe they'd feel more comfortable if I said that mainframes have served an important role and are part of the infrastructure of information processing, so they should be accommodated during the present transition to networked, client-server computing. But that's just not the truth anymore, and saying so would be a disservice to our readers. Accommodating mainframes will lead people to make long-term mistakes in systems design and standards-setting that will come back to haunt IS managers in two to three years."

**On computer journalism:** "*InfoWorld's* readers are loyal. That's because we've always had a high standard of journalism. We don't report news stories until we have three sources. We try to find the news and trends that are relevant to our readers, not our advertisers. We don't review products until they actually ship. We score products systematically, backed up by extensive testing. We care about our newspaper enough to make sure that it's accurate, useful, and timely. More than that, we feel like we are participating in something important—we're seeing the culmination of the personal computer revolution, as personal computing begins to rule the information systems of our country's largest companies. At *InfoWorld*, we're not observers looking on dispassionately—we're right in the thick of that change."

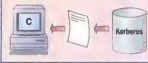
## How Kerberos works

Kerberos, named for a Greek mythological character, provides proof of identification in the form of a key between two parties that wish to speak.

1. To connect to Charlotte, Marc goes to Kerberos (a database with two sets of information: names and passwords) and says, "Tim Marc, give me a letter of introduction."



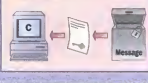
2. Kerberos creates a small message to Charlotte: "Charlotte, Marc wants to talk to you," and encrypts it.



3. Message comes across the network secured from access by other users.



4. Charlotte uses her secret key (stored on the database) to read the message.



protect credit card numbers and other financial data.

In NetWare, this is managed through access control. NetWare 3x provides discretionary access control, controlling access to specific directories, files, and print and job queues.

NetWare 4.x ties security management to NetWare Directory Services (NDS). Directory and file rights can be assigned to users, groups, organizational units, printers, and servers.

A host of security add-on products also address access control, complementing what comes in the network operating system. Mergent International Inc., in Rocky Hill, Conn., has a full suite of access-control products for securing the workstation, file server, and enterprise systems. Its customers, originally in the banking and government sectors, have typically added Mergent's products to control individuals' access to specific files and data.

"A bank called us in after finding that it was losing \$600,000 per month on loan application transfer fees. [The bank] wanted to find out who it was before he or she quit," recalls Todd Sun, chief sci-

entist for Mergent. By installing Mergent's access-control products, the bank was able to determine who was using a specific workstation to make the transfers.

Adding tools, such as The LAN Support Group Inc.'s Bindview Network Control System or Intrusion Detection's Kane Security Analyst, provide a LAN administrator with a record of activity on the LAN, to help spot unexpected behaviors or activities.

**CENTRALIZED SECURITY.** The future of security systems is centralized control and single points of entry for users, says Vijay Ahuja, security products manager in IBM's networking division. An authorization server, or single-sign-on server, holds not only a database of passwords but also rights and access limitations. With this kind of centralized system, IS can control access and authorization from a single point.

As organizations move to client/server architectures that allow users to access multiple servers, such security schemes become increasingly important.

"Until you have centralized security, you won't be secure," says David Scran-ton, director of technology at Memorex-Telex Corp. in Dallas. "If I let all centralize my security environment to a trusted server, then I can have a central group and control access from that central point."

Centralized management schemes are breaking down into two basic camps. NetWare 4.x bases its trusted server concept on the management and security services in NDS. Users can log on once to a NetWare 4.x server and have access to all other authorized servers and resources.

Other vendors are endorsing the security measures developed at MIT called Kerberos, designed to secure data on distributed networks. The Kerberos method has been incorporated into the Distributed Computing Environment (DCE) specification. The DCE approach—adopted by IBM in its NetSP application, among others—relies on an authentication server, which may or may not be a separate piece of hardware. (See diagram, left.)

"As DCE starts to gain mind share at the IS level, I think that we will see more use of Kerberos authentication," says Dave Passmore, president of Decisis Inc., a Herndon, Va., consulting firm.

Although both approaches offer credible authentication services, they represent two different IS camps.

"DCE is coming at the issue from the top down, and NDS [from the] bottom up," Passmore notes. "They will meet in the middle and it will be an interesting collision."

The key difference between the two systems is that NetWare's identification and authorization features use a public key/private key technology; DCE uses a private key system for encryption and authentication.

Encryption is extending to the application level as well, so that only authorized users and processes can access data. Last year, the Internet Engineering Task Force completed and began distributing the Generic Security Services (GSS) API, which programmers can use to call on security services in any application. Currently, only a handful of products, including IBM's NetSP, support GSS.

"In the long run, GSS is the programming interface that anyone can write to, regardless of whether it is OpenVision, DCE, or so on," Geer says.

## The trusted network

For years, computer vendors have tried to get C-2 certification for their security systems. The rating—administered by the National Computer Security Center—means that the system meets strict government standards for security. It covers not just the network or the hardware, but the whole shebang: operating systems, hardware, modems, and phone lines.

Such a security system makes sense in the mainframe world, where a single vendor is responsible for all aspects of the computing environment. But from the PC LAN vendor's point of view, it is practically an impossible goal.

"Eventually, our customers want to take out a system and replace it with

For its part, Novell seems committed to NDS, although it makes the marketing savvy point of saying it will cooperate with other vendors.

"NetWare 4.x's architecture is structured in such a way that we could implement a different scheme than we have implemented today," explains Scott Wells, product line manager for NetWare core services.

Novell's single-sign-on approach may need to change as customers combine different kinds of networks; currently NDS only secures NetWare 4.x LANs. Novell recognizes the shortcoming.

"We are willing to talk to other vendors, but we need their cooperation. We think that customers need to tell all their vendors to cooperate," Novell's security specialist Allen adds.

**TOUGHER YET.** Every security specialist will acknowledge that the tightest security measures are hardware based. Software can be hacked, reverse engineered, or simply disabled. Hardware, on the other hand, requires a greater level of ingenuity to be broken.

Current security devices run the gamut from fully insulated systems for government agencies to secure lines and Ethernet packet protectors, which prevent eavesdroppers from simply plucking the information from the line.

## Security Tips

Ken Cutler of the MIS Institute recommends these basic steps:

1. **Define:** Determine your security expectations. Establish guidelines that address security issues.
2. **Train:** Ensure proper training for everyone, including administrators and end users.
3. **Protect:** Maintain security protection. Pinpoint vulnerable points and determine controls.
4. **Equip:** Implement all necessary technology tools for maintaining protection.
5. **Assess:** Perform periodic risk assessments to find out what things look like on the LAN.

another," says Scott Wells, product line manager for Novell Inc.'s NetWare core services in Provo, Utah.

In an effort to serve government and security-conscious commercial customers, Novell is trying to establish a more realistic security architecture—one that will establish a platform of security and an array of the security impact if they swap, for example, brands of desktop computers or networks.

"When we are done with evaluation, we will have a trusted network design that will give customers and vendors a framework that can be plugged in and be trusted," Wells says.

Next spring, Novell plans to release to hardware vendors the Trusted Network Security Guide.

Where money is not a question, thumb-print readers, retinal scanners, and magnetic-strip readers are used. These systems typically add several thousand dollars and limit portability. And if these units have to be added to existing PCs, configuration time adds to the actual costs, too.

A more popular technique is called a token-based, or two-phase log-in, system. These systems verify users' identity through something they know (the password) and something they have (the information on the token).

Token-based log-in works with ACE-Server, from Security Dynamics Inc., in Cambridge, Mass., to produce and display a randomly generated number that changes every 60 seconds. When users dial in to the network, they provide both their standard user name and password and the currently visible number on the credit-card-sized SecurID card.

Because the number changes every 60 seconds, someone peering over the user's shoulder or tapping the phone line would only get an obsolete password.

With concerns about protecting patient privacy while providing doctors with remote access at a reasonable cost, the National Institute of Health opted for this system, says Don Preuss, section chief at the Bethesda, Md., organization.

"We developed an application [based on SecurID] so that we could have a controlled method to allow people to dial in," he says.

**BLANKET SECURITY?** Even run-of-the-mill computing now involves strategic information.

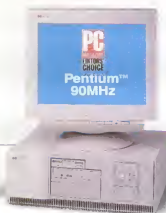
"In today's businesses, the value of the company's assets is not necessarily in the capital equipment but [in] intellectual assets," Wells says. Like a \$1 million piece of machinery, intellectual assets need to be protected as well.

Although most PC and LAN users don't tamper with security measures, LAN administrators shouldn't bank on good behavior. With more connected networks and an increasing number of mission-critical applications on them, securing a network just makes common sense, Ahuja says. "When did I buy security for my house?" he asks. "When a house down the street was broken into, the same is happening with LANs."

Alas, it may not be long before the residents of Boonville feel the need to lock up well. ☐

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# You can teach an old dog some client/server tricks

In the long run, it may be cheaper to retrain technical staffs than to hire new talent

BY SHAWN WILLET

With new technologies to support and develop for, IS shops are facing a critical decision: whether to retrain their existing staffs or hire already-trained newcomers to replace the veterans. Most IS managers say homegrown client/server programmers and LAN administrators are less expensive—even with training costs—than skilled outsiders.

Surveys have shown that lack of client/server skills is one of the prime reasons that companies cite for moving slowly to the platform. For example, a recent *InfoWorld* survey found that lack of training or education was second only to funding as an obstacle to implementing client/server systems.

Training the IS department has become a hot issue among large corporations, agrees the Gartner Group, a market research firm in Stamford, Conn.

Companies are investing in sophisticated training initiatives because, they reason, their existing staffs are already familiar with their business goals. In addition, mainframe and minicomputer professionals bring higher level systems management expectations to the IS team than a pure PC-bred department would.

For example, at Southern California Edison in Los Angeles, where a dozen client/server projects are under way, trainers from Sybase Inc.'s education division are brought in to teach programming for Unix and client/server, reports Al Suding, who manages the training programs at the utility company.

For the most part, mainframe programmers and administrators have been pretty adroit in picking up the new technology, Suding says.

"If they have experience with DB2 they usually pick [Sybase] up pretty fast. If they have no relational database experience, they have to spend more time on the fundamentals," he says.

When hiring, Southern California Edison complements its retrained programmers with candidates who have one or two years of experience working with the database.

According to Sybase officials, demand for courses has grown so much that the company has had to farm the courses out to third parties—either resellers or training organizations.

"About 75 percent of the students in the foundation courses are coming from a mainframe or midrange background,"

says Tom Conlan, a Sybase education manager for the Boston area.

The courses are not cheap: the average cost is \$350 a day. According to Sybase officials, it takes between 18 and 20 days of courses and about 3 months of hands-on experience to turn a mainframe jockey into a client/server programmer with a "minimal level of competency."

Independent outfits that train technical

tion at Novell Inc., about 370,000 students took at least one course in the Certified NetWare Engineer (CNE) program last year. That figure is expected to jump to 600,000 this year.

"There are 40,000 CNEs, but about 50,000 in the process of becoming CNEs," says Rick Romine, director of strategic development for Novell's education division. He credits the move

to client/server and PC LAN networks with the big increase in NetWare training.

Getting the skills to change from being a proprietary computer systems specialist at Northrop Grumman Corp., in Hawthorne, Calif., to being a NetWare administrator was expensive and difficult, but worth it, says Greg Evilsizer.

"I put in 8 to 10 hours a day in an 18-week course," he says. "Anybody who does it is really going to have to apply themselves."

The bill was \$6,000, and like all NetWare courses, the retraining was handled through local resellers or third-party training organizations.

Now, Evilsizer makes his living as a successful independent LAN consultant in Cypress, Calif. □

## Independent outfits that train programmers for client/server apps are doing a land-office business.

professionals for the client/server world, such as Drake Training and Technologies in the Chicago area, are doing a land-office business. Drake administered 488 client/server certification tests—for a range of products from Powersoft Corp.'s PowerBuilder to Sybase Inc.'s SQL Server—in the first quarter of 1993; in the first quarter of 1994, the company administered 4,513 similar tests.

Enrollment in NetWare certification programs is also way up. According to Carolyn Rose, vice president of educa-

## Manager's Bulletin Board

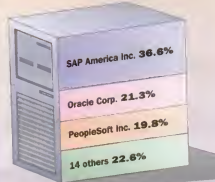
And don't forget the frequent flyer points. A 1994 salary survey of 33 companies revealed some surprising news: chief information officers' overall compensation increased this year, and a few CIOs reported compensation in the \$1 million range. According to the Information Management Executive survey by Edward Perlin Associates, in New York, the increases were largely the result of growing bonuses, which pushed total compensation up 10 percent. (Basic salaries remained unchanged, according to the survey.) The annual poll tracks executive salary trends within the banking, insurance, and manufacturing sectors, among others.

CIOs weren't alone in sizable raises. Salary managers and planners saw their compensation rise by a hefty 18.8 percent, the survey says. For more information on the salary survey, contact Edward Perlin Associates, (212) 714-0588.

**New job category.** Organizations making the move into client/server environments may want to consider establishing a new position within their programming departments: interface designer. Consultant Susan Weinschenk, in Edgar, Wis., says that some half-dozen clients have created such positions. The problem, she says, is that traditional programmers wrestling with new tools and methods of creating applications don't have the time to think about the flow of screens. To many traditional programmers, such concerns only get in the way, she says.

The interface designer typically joins a project at the prototype phase—"when a project is already in trouble," Weinschenk says. The designer's suggested changes to improve the application that programmers invite him or her to join the next project at the beginning.

## The client/server app market Three vendors dominate ... for now



The fight for client/server application market share is just beginning. The market will be growing at a rate of 50 percent annually until 1996 and market share is likely to disperse before any consolidation occurs.

Although interface design is a fairly new field, Weinschenk believes that interface designers won't be like the lonely Maytag repairman for long. By the end of the year, she expects more firms to have created similar jobs.

AUG.  
22  
1994

Calendar

### SEPTEMBER

7-9 Windows Solutions, San Francisco. Contact ZD Expos, (800) 488-2883.

12-13 Digital Media Outlook, San Francisco. Contact Technologic Partners, (212) 696-9330.

12-16 Interop+NetWorld, Atlanta. Contact ZD Expos, (415) 578-6900.

18-22 Interex '94, Denver. Contact Interex (Hewlett-Packard user group), (408) 747-0227.

19-22 Client/Server Workshop, Washington. Contact DCI, (508) 470-3880.

20-22 Networks Expo and Windows World, Dallas. Contact Blenheim, (800) 829-3976.

26-28 Information Superhighway Summit, San Jose, Calif. Contact IDG World Expo, (508) 879-6700.

### OCTOBER

3-7 Software Development '94 East, Washington. Contact Miller Freeman Inc., (415) 905-2784.

4-8 Unix Expo '94, New York. Contact Bruno Blenheim, (800) 829-3976.

10-13 AEC Systems, Fall (and Computers for Contractors '94), Chicago. Contact AEC Systems, (800) 451-1196.

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- 14" SVGA color monitor
- DOS 6.2, Windows for Workgroups, Microsoft Mouse
- Choice of Lotus Windows application



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- 15" SVGA color monitor
- 10-key vertical case
- DOS 6.2, Windows for Workgroups, Microsoft Mouse
- Choice of Lotus Windows application



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- DOS 6.2, Windows for Workgroups, Microsoft Mouse
- Choice of Lotus Windows application



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Pentium-90  
**\$3938**

### BEST MM:

- 8MB RAM
- 256K SRAM cache
- 528MB local bus IDE hard drive, 256K cache
- 2X CD-ROM drive, 3.5" 144MB floppy drive
- Multimedia upgrade, 16-bit sound card, stereo speakers
- Diamond Stealth 64/PCI local bus graphics with 2MB RAM
- 17" SVGA color monitor
- 10-key vertical case
- DOS 6.2, Windows for Workgroups, Microsoft Mouse
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## Case Study

# Northrop's aircraft group flies with client/server

## Use of Unix and off-the-shelf software makes systems overhaul clear for takeoff

BY PAUL KARON

The '90s have been doubly tough for aerospace contractors such as Northrop Grumman Corp. The military has decreased its spending, and global economic recession has caused airline companies around the world to postpone new plane purchases.

To deal with such threats to its bottom line, Northrop split its Hawthorne, Calif.-based Commercial Aircraft Division from the main company and sent the division off to seek its fortune.

The Commercial Aircraft Division has one product: the fuselage for Boeing 747 jumbo jetliners. In fact, it has manufactured the fuselage for every 747 ever assembled. Northrop Grumman makes three fuselages a month, and each one must be assembled perfectly. Boeing won't accept a fuselage if the polished surface of the outer aluminum skin has even so much as a scratch.

It's a business with little room for error. It's also a business that has pitted this division of Northrop Grumman against a growing pool of competitors from the Pacific Rim, all vying for a shrinking piece of the world's commercial airplane market.

To stay aloft in this competitive, unforgiving environment, Northrop Grumman's Commercial Aircraft Division decided to undertake a complete overhaul of its information systems.

**TAKING THE PLUNGE.** "We did an affordability study at the end of 1992 and looked at all costs for the Commercial Aircraft Division of Northrop, and we decided we had to reduce our data processing costs by 60 percent," says Joseph Dugan, manager of business systems for the division. "We knew we had to go to a client/server solution, but it wasn't clear at the time that the systems could handle a manufacturing environment of this size."

Still, the division moved its entire information system from a 20-year-old mainframe computer to an open-systems, Unix-based, client/server solution, a process that began last year and was just completed in July.

The new system is not only handling the workload, but it has also enabled the division to redefine almost every aspect of its business, from the back-office financials to the factory floor to maintaining inventory.

Dugan describes the division's new client/server system as a three-tiered architecture. The base tier consists of eight Hewlett-Packard Co. HP 9000 Series 800 servers—one 170, three 150s, and four 135s—and two Model E30 servers.

These computers are the division's database servers, home to Oracle Corp.'s Oracle7 relational database management system, which is the main software engine for about two dozen applications that handle all of the data processing for the enterprise. Every aspect of the business,

from personnel to the shop floor status reports on fuselage assembly, goes into the system.

"Previously, all that information was in separate databases on the mainframes, in incompatible systems that never talked to each other. Because of this, we had a lot of redundancy," Dugan explains.

In addition to the Oracle7 database, the Northrop IS planners selected a suite of Oracle applications: financials, manufacturing, engineering graphics, personnel and human resource records, payroll, assembling-line status, inventory control, and so on. About 10 other applications from other vendors are also part of the system.

**OFF-THE-RACK SOFTWARE.** Like the Oracle database and modules, these software applications are off-the-shelf packages. It's a key part of the whole strategy to cut IS costs, says Gary Lampkins, project manager for the manufacturing application systems implementation.

"Years ago, you had to write everything you needed to run the enterprise," Lampkins notes. Now, the division's in-house programming staff can turn its attention to other tasks.

All of these tactical applications run on the system's second tier: 21 HP 9000 Series 700 servers.

The third tier consists of about 700 clients: 100 HP workstations, 100 Pentium and 486-based PCs, 250 Macintoshes (including PowerPCs and Model 660 and 880 machines), 250 HP Envisors intelligent X-terminals, and a few dumb terminals.

Unix ties everything together. All the server-based applications are Unix-based, but users on the DOS/Windows and Mac clients can also run standard applications from their environments.

When communicating with the application servers, the clients run as Unix-emu-



Downsizing has cut data processing costs and improved business processes at Northrop's Commercial Aircraft Division, says systems manager Joe Dugan.

lator X-terminals. But they can multitask the Unix sessions simultaneously with the DOS/Windows and Mac sessions, cutting and passing between them seamlessly, Dugan says.

**BETTER CONNECTIONS.** The new system has also enabled the Commercial Aircraft Division to redesign some of its business processes. For example, the company has implemented a "supply-chain" management process that brings information from parts and materials suppliers into the Northrop system.

"We actually have visibility into suppliers and vendors, so we can see how changes on their part impact our whole manufacturing line," Dugan says. Some of the vendors dial right in to the network from their remote sites, some communicate via electronic data interchange (EDI), and some trade batch downloads or tapes with the Commercial Aircraft Division.

"We even have some mom-and-pop suppliers that we'll just fax to, and when they fax back their information it goes right into our database," Dugan says.

**A STREAMLINED SYSTEM.** "One of the advantages of this architecture is that it gives us the ability to use an integrated set of statistics, graphics, and engineering software application tools that is probably 10 times as powerful as what we were coming from," Dugan notes.

For example, with the old mainframe-based system, the thousands of engineering drawings and schematics were on paper.

Once the new architecture was installed, all the old drawings were scanned into the system and digitized. Now Northrop engineers can find any drawing in seconds, explained Ron Bourassa, project manager for manufacturing engineering systems.

The engineers can view the drawings on their high-resolution color monitors and zoom to any part of the drawing without paging through dozens of paper drawings and schematics. Any change an engineer makes to one drawing is propagated instantly to every related drawing in the system, so the drawings remain consistent.

Every system that ran on the mainframe was moved to the client/server solution, approximately 100 applications in all.

In the data processing side of the division's business, there is about as much room for waste as there is for extra space between the side panels in a fuselage—which is to say, none at all.

The Commercial Aircraft Division's entire work culture is being changed and streamlined through the new computers and applications.

"It's made a profound difference in our business," says Judy Jurdans, manager of general accounting and cash management.

The division is able to produce much more reliable financial information, Jurdans says, and in a much speedier fashion than was possible under the old procedures.

"Now, if I'm in the receiving dock hiccups, we know it here." □

Paul Karon is a Los Angeles-based writer who frequently covers client/server technology.

## Northrop pilots client/server

**Who:** Northrop Grumman Corp.'s Commercial Aircraft Division

**Where:** Hawthorne, Calif.

**What:** The division manufactures the fuselage for Boeing 747 jets, a process that involves 256,133 parts, all of which must be assembled perfectly.

**Problem:** In a competitive and recession-ridden business climate, the division wanted to cut its data processing costs by 60 percent. Client/server technology was viewed as the answer, but there were uncertainties about whether it would work in a large manufacturing environment.

**Solution:** Using Unix-based servers and numerous off-the-shelf software packages, the division has been able to significantly cut costs. Additionally, with all company data stored in and distributed from one interconnected architecture, many business processes have been streamlined.

**Payback:** The division, which finished building its client/server system in July, expects a return on investment by September. Other divisions are studying the project to implement client/server systems of their own.

Down to the Wire / Nicholas Petreley, Steve Irvin, and Greg Johnson

## Essex's TCP/2 and Citrix's WinView: All right, we get the connection

If you've been following our adventures regularly, you've probably noticed by now that we often try to build the column around a theme. One week, we might tie everything into poorly written documentation; the next week, we might show how object-oriented groupware development tools compare to pickled yay. That sort of thing. But with all the things we have to do to wrap up the testing phase of our TCP/IP product comparison, we're having trouble finding the time to pin down a theme this week.

**GET PROTECTED: SAFE STACKS.** We're still not done getting Essex Systems Inc.'s TCP/2 for DOS installed. Oh, it's working—but in real mode. That's because the documentation says not to attempt to get it working in protected mode until you're sure it works in real mode.

Well, we're sure now. Greg grabs the manual and turns to the part in the installation section about graduating to protected mode. He looks, winds up, and pitches a theme idea, "How about an *Untouchables* theme?"

"Untouchables?" he asks.

"Yeah. We're setting up a TCP/IP protocol stack."

"So?"

"And Robert Stack played Elliot Ness in the TV series. Get the connection?"

We shake off the pitch. The manual says to replace the real-mode drivers with protected-mode drivers. We dutifully follow these instructions and restart. Everything is still working. Good sign.

Meanwhile, Sherman Colson (a local consultant working with us on this project) notices we're low on system memory. With all the drivers loaded, only 398KB of conventional RAM is free.

We run RAMBoost, an IBM PC DOS utility that optimizes the way memory is



used. It begins analyzing memory usage and tries to load some device drivers into high RAM. We get the following error message: "Warning: CPU cannot be switched into protected mode."

Greg grabs the manual again and starts flipping. The manual warns not to use the keyword NOEMS if we're using a VCP/2 server. VCP/2 server? Cut us a break. Yes, we know there's a difference between DP/2 and VCP/2, but can't we keep it simple? It's a memory manager, OK?

We use DOS' text editor EDI to edit the CONFIG.SYS file. We remove the NOEMS keyword and replace it with the instruction FRAME=NONE. That does just about the same thing as NOEMS, so we're not sure why one method would work and the other wouldn't. But it does.

By the way, we wouldn't normally use EDI, except to take a cheap shot at this feature-free editor. But we discovered last week that IBM's full screen editor is incompatible with TCP/2.

We reboot. We now have 505KB of free RAM. "Hey," Nick says, "we could do a '70s theme."

"Huh?" we respond.

"Remember all those signs in the '70s that said 'Free Angela Davis'?" It was a long time ago, but yes, we think we do. "Well, when I saw the signs I asked somebody where I could get my free Angela Davis. He pointed out the sign actually meant 'Release Angela Davis.' Anyway, free Angela Davis—free conventional RAM—get the connection?"

We ignore him.

**I NEED A BRYANT.** Permit us to break tradition and digress a moment. A few weeks ago we mentioned that we had problems with Citrix Systems Inc.'s WinView for Networks remote application server and were examining alternative methods of telecommuting. (See "Making a remote network connection: Don't try this at home, kids," July 11, page 68.) We had only sporadic problems with most of our WinView remote clients. The biggest problem we had was when we ran WinView remote link in a DOS Window under OS/2. When we did that, the window occasionally froze, forcing us to disconnect and call again.

The folks at Citrix contacted us shortly after reading the column and urged us to update our installation to Version 2.21 to see if that would fix the problem.

The fact is, we have other motives for looking at alternatives. We want to run OS/2 PM applications remotely. And, although WinView runs under OS/2 (WinView is actually Citrix's own character-mode-only version of OS/2—they licensed the code from IBM), it doesn't support PM applications remotely. And Citrix has no plans to add this capability.

That gives Steve an idea. "We could do a conservatives theme." We think we understand the connection. Citrix is being conservative about which OS it's going to support in the future. It's going to phase

out OS/2 and move its server to NT because it thinks NT is a safe bet.

"Well, no, actually," Steve says. "What I had in mind is that Rush Limbaugh is a conservative."

"And?"

"And Rush was a spokesman for orange juice for a while."

"Yes?"

"And oranges are citrus fruit. Citrix? Citrus? Get the connection?"

We don't.

But we still think we owe it to the folks at Citrix to try their update, so we install it. It doesn't fix the client problems running in a DOS window under OS/2, but it does seem to be much more stable when you run the software under plain DOS.

Now that we have our WinView server back up and on the network—and here, finally, is the tie-in with TCP/2—we should update the TCP/IP drivers on the WinView server so we can access the Internet remotely. And we've been using none other than TCP/2 for OS/2 for such access because it's strictly character mode, like the Citrix version of OS/2.

We pull out the TCP/2 for OS/2 installation diskettes and slip the first one into the drive. We run the installation program. It complains that the installation diskette is corrupt and exits.

We don't have time for this. We ignore the message and hand copy the files from the diskettes to the hard drive. We edit the CONFIG.SYS file and make the necessary configuration changes. It works. Time to go home.

On our way out, Sherman suggests we do a column on TCP/2 and pickled yay.

Get the connection? If you do, send us E-mail via the Internet at [nicholas.petreley@world.com](mailto:nicholas.petreley@world.com), MCI Mail 527-1353, or CompuServe 71333,426.

LAN Talk / Paul Merenbloom

## Are hyped, high-tech LAN products of value to your operation?

Well, it took me a while, but I've finally figured out what's going on in the LAN market.

Let's see. Switching is going to eliminate routers (sorry, Cisco). Wellfleet is buying—oops, I mean merging with—SynOptics (will that be WellOptics or SynNet?). Asynchronous Transfer Mode (ATM) is going to take over the world—backbone, desktop, and all. And the hub vendors are providing us virtual networking, which eliminates the need for switches and routers.

Confused? It's OK to say yes. The hype machines are incredible. There is some good news though. The dust is starting to settle and the horizon looks clear.

A few weeks ago I wrote a column on the hidden costs of virtual networking, and your response mail was very interesting. (See "Get out your checkbook for port- and LAN-switching solutions," July 18, page 62.) The only dissenting mail I received was from vendors.

This week I want to solicit your opinions once again. I'm taking an informal poll out west, where in the trenches think about LAN switching, ATM,

routing, and so on. How is the attention focused on these technologies affecting your decisions for today and tomorrow? Do these technologies fit into your budgets? How might you deploy them and when? Do you care about them at all?

Personally, I've about had it with the hype machines. Granted, ATM, switching, and so on are exciting, but there are also the issues of supporting production networks, loading and testing software, building disaster recovery plans, and reviewing budgets (while trying to get more with the limited money available). And then you have to support the users.

Let me share with you my opinions on some of these issues.

**ATM—I love it.** I've been a long supporter of those little machines that accept my plastic card and spit out cash. As for the data version, I like that too. But I'm realistic. ATM was the first communications protocol to be put into products while its specifications were under design.

Frame relay, X.25, 802.5 (Token Ring), 802.3 (Ethernet), and others were completed specifications before products hit the street. Breaking everything into 485-byte packets (payload plus header) is great, but the key to using ATM in a

backbone, workgroup, or WAN is in the LAN Emulation Specification.

Last I checked, this specification is due to the ATM Forum (the standards body) in September and will be passed on to several other standards bodies before it is blessed as a standard. My guess is that this process will take six to nine months at a minimum. From there, vendors can begin their final designs for products that we'll see three months later.

In the interim, product implementations of ATM will:

- be expensive,
- face interoperability challenges, and
- may have to be scrapped when the specs are finalized.

Put these together and add the zero down time/zero risk demands for LANs and I get the "Not Ready For Prime Time" warning. Sure, if some extra money is available in research and development, I might want to tinker with ATM—but for production users? Forget it.

This brings us to the next issue: Where and how might I implement ATM and/or LAN switching?

LAN switching is a tool with great potential, but I would prefer to implement it on an evolutionary basis. I've never bought a router exclusively for segmentation (although I've been an advocate of collapsed backbones). I've seen data sources and users are forcing more traffic off the LAN and onto the WAN. If I can apply switching between the hubs and routers, I'd be happy to get the router's CPU cycles back. And who can afford to toss existing systems and start over?

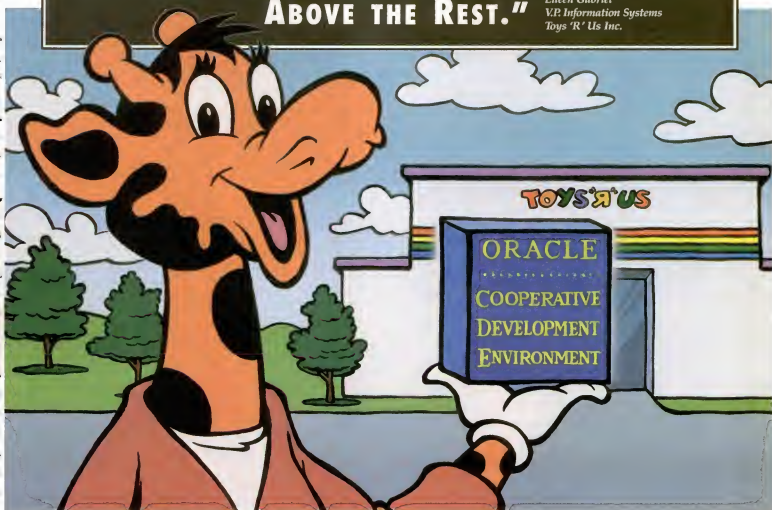
Switching, which is largely very fast but expensive, will suffer the same malaise that bridges do over time. The pipes will fill and the traffic will jam. The needs for filtering, prioritization, security, path selection, and protocol conversion functions provided by routers haven't diminished. Rather, these needs will increase as inter- and intra-LAN traffic flow expands. As I said, this is a very confusing and controversial area. Please drop me a line with your thoughts and questions.

Paul Merenbloom is vice president, technology research at Piper Jaffray in Minneapolis. Send comments to him via CompuServe at 70743,3524; MCI Mail at PAULM; or on the Internet at [paulm@mcimail.com](mailto:paulm@mcimail.com).

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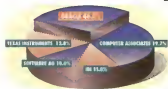
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## REVIEWS / PRODUCT COMPARISON

# Pulling away from the HARD FAX



**F**ax software is fighting to wrest your fax transmissions from the hands of one of the remaining enemies of the paperless office: the fax machine. And it has some compelling arguments on its side. After all, do you want to maintain a separate piece of equipment that requires hard copy in and hard copy out? With a press of a key, fax software lets you zip a memo directly from your word processor to one, 10, or 100 people — without wasting a single sheet of paper.

In this comparison of Windows-based fax software, we evaluated the speed and ease of use of Cheyenne Software Inc.'s BitFax Professional 3.07, Trio Information Systems Inc.'s DataFax+ 4.1e, Phoenix Technologies Ltd.'s Eclipse Fax 6.0a, SofNet Inc.'s FaxWorks Pro 3.0, SoftKey Inc.'s UltraFax 1.1, and Delrina Corp.'s WinFax Pro 4.0. We tested each package according to a plan newly developed for this comparison.

Among these products, you should be able to find a way to bring your fax communications into a new era of integrated electronic communications.

**A BETTER WAY TO HANDLE DOCUMENTS.** There are big advantages to using computer fax programs — besides saving trees. First, if you have all your fax traffic moving through your computer, you can automatically maintain

an electronic record of your fax activity. That means no more maddening searches for misplaced memos and no more retyping of faxes stained and crumpled before you were able to forward them.

Second, you don't have to stand by the fax machine waiting for it to transmit your item. In fact, you don't even have to be in the building; you can schedule faxes for later transmission if you don't want to tie up your telephone line now — or schedule them for a time when telephone rates are lower.

Third, if you already have a laser printer, buying fax software and a fax/modem is a low-cost route to a plain-paper fax solution.

Finally, if you pick a fax software package that works with your contact-management and E-mail software, you'll have an all-in-one communications solution. With WinFax Pro, for example, you can send, receive, and manage your E-mail right along with your fax messages. Don't expect your fax machine to do tricks like that.

**BUT DON'T TOSS OUT YOUR FAX MACHINE YET.** Although the popularity of PC-based faxing is growing rapidly, perhaps its biggest drawback is receiving documents. Left on all the time, fax machines receive and print documents unattended, at all hours of the day. Consider whether you would feel comfortable doing the same with your PC.

Further, some faxing tasks are still faster and easier on a traditional fax machine. It's much more difficult to in-

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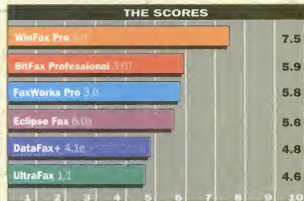


*Six Windows programs  
that let you send and  
receive fax  
communications right  
from your desktop PC*

stall a fax/modem and learn to use fax software than to punch in a number and feed a document into a standard fax machine. And what are you supposed to do, for example, if you want to fax a map or a scribbled note? It's not a quick and easy task with most PC-based fax software.

The first of these problems — the difficulty of installing the fax/modem and software — is rapidly disappearing. Many computers today come with fax/modems already installed or are equipped with high-speed serial ports to which users can connect an external fax/modem. Moreover, most of the current fax software is relatively easy to install, thanks to automatic modem detection and configuration features.

The second drawback — getting hard copy into a digital form that your PC can use — is still a major hurdle. Typically you'll need a scanner, and although scanners are growing more popular for a variety of reasons, they are hardly commonplace. To aggravate the situation, a scanner is another complicated piece of equipment that most office workers would find much more intimidating than a fax machine. For those who need to input hard copy, the stand-alone fax machine remains the best solution. But if you produce most of your fax documents on your computer and send more faxes than you receive, you may want to give fax software a look.



### Executive summary

I didn't surprise us that Delrina Corp.'s **WinFax Pro 4.0** was the top performer in this comparison. WinFax Pro benefited from a more rapid development program than any of the other products reviewed, with Delrina releasing new, improved versions yearly.

This version sports the most customizable logs of any program we examined. It also offers a set of features not matched by the competition, including remote fax retrieval and the capability to manage E-mail along with faxes.

WinFax Pro isn't the easiest program to learn — in large part because of its array of powerful tools — but it's a polished production from start to finish. Its list price is \$129.

Cheyenne Software Inc.'s **BitFax Professional 3.07** earns the second-highest score in this comparison, thanks to its solid set of fax features. BitFax also bundles data communications, for connecting to on-line services, and a voice mail manager, all for \$129.

We disliked BitFax's method of providing all of its logs and utilities as separate modules, simply piled together in a program group.

Scoring only slightly lower than BitFax and within two-

tenths of a point of each other, Phoenix Technologies Ltd.'s **Eclipse Fax 6.0a** and SofNet Inc.'s **FaxWorks Pro 3.0** offer fully capable send-and-receive tools and strong fax-management features.

**Eclipse Fax 6.0a's** unique Fax Assistant lets you set up unique program configurations for each person in your phone book to control how files are received and whether they are automatically printed, converted to text by optical character recognition (OCR), or copied to other individuals. Also, Eclipse is relatively inexpensive at \$84.95.

Unfortunately, Eclipse suffers from ease-of-use problems and makes some operations genuinely cumbersome to perform.

**FaxWorks Pro 3.0**, in contrast, makes its mark as the easiest program to learn. Credit for this ease of learning goes mostly to FaxWorks Pro's unique installation routine for novices and its pop-up cue cards that explain program features.

On the down side, FaxWorks Pro has limited cover-page editing tools. The program lists for \$129.

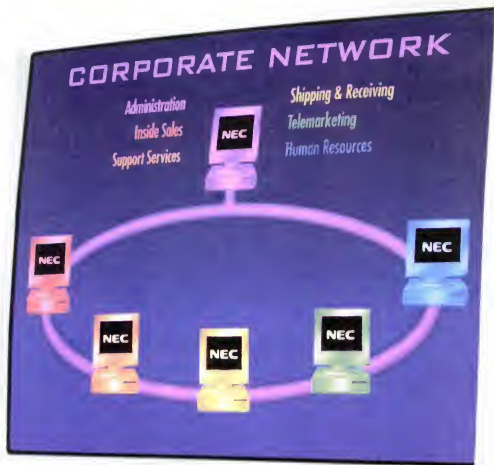
Trio Information Systems Inc.'s **DataFax+ 4.1c** and SoftKey Inc.'s **UltraFax 1.1** scored close together at the bottom of the pile.

Relatively difficult to learn and hampered by an underpowered phone book and weak documentation, **DataFax+ 4.1c** lost additional points as a result of our misadventures with the product's technical support staff. On the plus side, DataFax+ offers unique statistical tools for tracking fax transmissions. Its list price is \$129.

**UltraFax 1.1** was the lowest scoring program in this comparison. The program lacks many of the features fax users have come to expect, such as fax auto-forwarding, and its OCR engine is error prone and very slow. UltraFax's greatest virtue is its \$49.95 list price.

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## The big easy: Fax software testing focuses on ease of use

Fax programs are meant to be used, not learned. Although that's true of any program, a fax program is more like a utility than an application; you use it to accomplish a very specific job, and you don't expect to spend a lot of time figuring it out.

For this first formal *InfoWorld* comparison of fax software, we designed a test plan that put each program through a series of real-world tasks and the sort of daily applications that most fax users are likely to encounter. In the course of putting the programs through their paces, we focused a good deal of attention on the applications' ease of learning and ease of use.

We also put each program through a series of speed tests designed to assess the amount of time a typical user might spend sending faxes from the desktop. After all, if it's quicker to get up and walk over to the fax machine, why bother with fax software at all?

### PERFORMANCE:

**Installation and configuration:** We tested the ease of installing the program and the degree of control it provided over setup. During installation, we looked for automatic modem detection, which can free you from digging through modem manuals and diagnosing serial ports. We also checked for security options such as password protection, and we looked at the program's flexibility in customizing the user interface. Finally, we noted the extent of each program's use of Windows resources.

To receive a score of satisfactory, the program had to install easily, with no daunting configuration problems or setup questions. We added points if the program automatically detected and configured the fax/modem and if it offered some sort of security feature. Listing hard disk requirements and availability and providing lots of custom installation and configuration options also increased a product's score.

**Preparing a fax:** In this test, we created simple one-page faxes using the same data but from several sources. First, we

created a cover-page memo from within the fax software application. Next, we created it in another Windows application. Finally, we scanned pages into the program and tried attaching binary files to send with faxes.

We examined each program's formatting tools, preview capabilities, and annotation and spell-checking features. We also tried to copy and paste text from another Windows application into the memo.

To receive a score of satisfactory, the program had to let us enter text on a cover-page, input images from our scanner, and prepare faxes from documents in other Windows applications. It gained points if we could import graphics onto the cover-page memo and attach binary files. We also gave additional points if the program provided macros that converted externally prepared documents to faxes (without our having to change printer drivers). The program scored higher if it allowed us to copy text from outside applications and paste it into cover-page memos.

**Preparing and using the phone book:** In this task, we added 10 contacts to each program's default phone book. We noted how easy it was to add contact information, and we noted the number and the types of data fields provided. We also tested each program's tools for searching and sorting the phone book, printing records, creating recipient groups, and maintaining multiple phone books. We noted if each program let users send faxes from an outside personal information manager (PIM) or manage E-mail from the fax program. Fi-

nally, we imported a delimited ASCII file containing 500 contacts into each program's phone book, noting its ease of use and support for other file formats.

To receive a score of satisfactory, the program had to let us add records to its phone book and print records. It also had to successfully import our ASCII file. We gave the program a higher score if it let us sort the phone book by name and company and if the phone book could interact with other Windows applications.

**Cover page creation and management:** We noted the number of predesigned cover pages provided with each program. We then attempted to customize these cover pages by inserting our company logo, boilerplate text, and variable fields. We also tried to create custom cover pages from scratch, noting each program's graphic import capabilities and drawing tools. Finally, we checked each program's provisions for cataloging and selecting cover pages.

For a score of satisfactory, the program had to let us create a custom cover page, import a graphic image onto the page, and store more than a single cover page for future use. The program earned extra points if we could modify the layout of cover pages and select from different font types and sizes. Offering a variety of pre-

designed cover pages and providing a visual library for selecting pages earned fax programs more points.

**Sending and receiving faxes:** For this task, we tested each program's options for sending and receiving faxes. We scheduled and addressed fax transmissions and configured the program for automatic fax processing upon transmission and receipt.

The product earned a satisfactory score if it successfully sent and received all our prepared faxes. In addition, the program had to let us specify the number of retries it would attempt if the receiving station was busy. The program scored higher if we could address faxes to named groups of recipients, configure it to automatically delete sent faxes rather than save them, and automatically forward received faxes to another number.

**Managing faxes:** We tested each program's fax-management features, such as searching, sorting, moving, deleting, and archiving. We also evaluated the logs that each program kept for tracking stored faxes. We examined each program's tools for viewing faxes, including rotating and anti-aliasing features.

The program received a score of satisfactory if it provided an adequate directory

See **HOW WE TESTED**, page 84



### BENCHMARKS

#### Windows fax software

##### Fax operations

Send a cover-page fax  
Send a five-page fax with cover page from Word for Windows  
Receive a two-page fax with cover page  
Rotate a single page of a received fax  
Rotate and save a two-page received fax

##### Printing

Spool a three-page fax to printer  
Total time to print a three-page fax

##### Optical character recognition

Recognize a 3,962-character received fax

	BitFax Professional 3.07	DataFax + 4.1e	Eclipse Fax 6.0a	FaxWorks Pro 3.0	UltraFax 1.1	WinFax Pro 4.0
01:09.4	01:15.6	01:11.0	01:05.4	01:40.7	01:00.4	
08:22.5	08:02.3	07:48.0	07:41.5	08:39.9	08:47.2	
01:55.4	01:54.3	01:48.5	01:48.1	01:53.0	02:02.3	
00:00.8	00:00.6	00:00.8	00:00.7	00:01.5	00:01.0	
00:09.6	00:19.3	00:48.2	00:48.6	00:14.6	00:20.4	
N/A	00:20.4	00:44.1	00:44.6	00:48.3	00:20.9	
N/A	09:29.8	16:47.3	16:43.4	16:02.5	09:29.1	
01:40.3	01:06.6	01:54.0	01:41.6	01:27.3	02:22.5	
90%	88%	87%	92%	71%	94%	

Times are in minutes, seconds, and tenths. Bold type indicates best results in each category. All tests were performed on a 33-MHz Gateway 486 with 8MB of system memory. We used an Intel Satisfaction 400 fax/modem (14.4Kbps fax) and an HP FAX-900 fax machine for send and receive operations. The Windows swap file was set to 13,746 bytes, permanent, with 32-bit access.

### REPORT CARD


#### Windows fax software

	(Weights)	BitFax Professional 3.07	DataFax+ 4.1e	Eclipse Fax 6.0a	FaxWorks Pro 3.0	UltraFax 1.1	WinFax Pro 4.0
<b>Price</b>		\$129.00	\$129.00	\$84.95	\$129.00	\$49.95	\$129.00
<b>Performance</b>							
Installation and configuration	(100)	Good (62.50)	Good (62.50)	Satisfactory (50.00)	Satisfactory (50.00)	Good (62.50)	Very Good (75.00)
Preparing a fax	(125)	Satisfactory (62.50)	Satisfactory (62.50)	Satisfactory (62.50)	Satisfactory (62.50)	Poor (31.25)	Very Good (75.00)
Preparing and using the phone book	(125)	Good (78.12)	Poor (31.25)	Satisfactory (62.50)	Satisfactory (62.50)	Poor (31.25)	Very Good (75.00)
Cover-page creation and management	(50)	Poor (12.50)	Good (31.25)	Satisfactory (25.00)	Good (31.25)	Satisfactory (25.00)	Excellent (50.00)
Sending and receiving faxes	(125)	Good (78.12)	Good (78.12)	Good (78.12)	Good (78.12)	Satisfactory (62.50)	Very Good (93.75)
Managing faxes	(125)	Good (78.12)	Satisfactory (62.50)	Good (78.12)	Good (78.12)	Satisfactory (62.50)	Very Good (93.75)
Optical character recognition (OCR)	(50)	Good (31.25)	Satisfactory (25.00)	Satisfactory (25.00)	Satisfactory (25.00)	Poor (12.50)	Very Good (37.50)
Speed	(25)	Satisfactory (12.50)	Good (15.62)	Very Good (18.75)	Very Good (18.75)	Good (15.62)	Satisfactory (12.50)
Documentation	(75)	Good (46.87)	Poor (18.75)	Satisfactory (37.50)	Very Good (56.25)	Satisfactory (37.50)	Very Good (56.25)
<b>Support</b>							
Support policies	(50)	Very Good (37.50)	Very Good (37.50)	Good (31.25)	Very Good (37.50)	Very Good (37.50)	Very Good (37.50)
Technical support	(50)	Satisfactory (25.00)	Poor (12.50)	Very Good (37.50)	Satisfactory (25.00)	Satisfactory (25.00)	Good (31.25)
<b>Value</b>	(100)	Very Good (75.00)	Satisfactory (50.00)	Good (62.50)	Good (62.50)	Good (62.50)	Very Good (75.00)
<b>Final score</b>		<b>5.9</b>	<b>4.8</b>	<b>5.6</b>	<b>5.8</b>	<b>4.6</b>	<b>7.5</b>



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## BitFax Professional 3.07

Although basic send and receive fax capability is bundled with a number of data communications packages, Chrysom Software's BitFax Professional 3.07 is the only full-featured fax program we've found that includes voice and data communications modules for connecting to on-line computer services. As a fax program, BitFax is a creditable performer, though it's neither the easiest to use nor the most powerful product reviewed here. The most obvious flaw is the way the program's features are integrated—*or, in this case, not integrated.* All the major logs and utilities are separate modules lumped into a program group menu. Nevertheless, BitFax's low price and broad array of features make it an attractive choice for anyone looking for a package of fax, data, and voice tools.

Installing BitFax is simple, thanks to the thoughtful design of the setup program. You can choose between a complete installation, which requires 9MB of disk space; a minimum installation, which requires 3MB of disk space; or a custom installation. Whichever you choose, the program shows how much space the setup needs and how much is available. For custom installation, the program updates the space requirements as you select or deselect each module. Unfortunately, BitFax doesn't provide an uninstall utility. During installation, BitFax automatically detects and configures your modem.

Before the setup routine creates a Windows program group, it offers to install macros for sending faxes from three applications: Lotus Development Corp.'s Ami Pro (Version 3.0), Microsoft Corp.'s Excel (Versions 4.0 and 5.0), and Word for Windows (Versions 2.0 and 6.0).

We felt that the overwhelming array of separate modules—Transmit Manager, Transmit log, Receive Manager, Receive log, Fax Manager, viewer, and phone book—hampered configuration. Furthermore, we were unable to make BitFax automatically display the Receive and Transmit logs with the Fax Manager when we launched the application.

The program doesn't provide password protection for access to the fax modules or to individual faxes, but it does for the phone book data screen that contains your credit card number. You can select individual data columns to show in the logs, rearrange and resize the columns, and selectively display grids. BitFax required 10 percent of our system resources to load just the Fax Manager and Receive Log. **Score: Good.**

We found BitFax extremely easy to use for creating simple one-page faxes or cover sheets and for creating faxes in other Windows applications. The only task we couldn't accomplish was sending a binary file with a fax.

The dialog box for creating one-page faxes is a model of efficiency. With the click of a button you can insert image files, such as your company logo, at the top of the page. Inserting another image file, such as your signature, at the end of the message is just as easy. Enter the body of your message into the main window, and you're done.

On the downside, the only way to adjust the layout of the text is in the viewer, which doesn't allow text to wrap. The viewer's graphic annotation tools are also weak.

BitFax doesn't allow you to import graphic files onto a page, except into the logo and signature fields. It also won't let you change the size or location of these elements.

BitFax was capable of performing our scanning operations with certain limitations. The program supports TWAIN-compatible scanners, including our Hewlett-Packard Co. HP ScanJet IIc. You do all scanning from the viewer, where you can scan a page for immediate sending or store it as an image or fax document for future use.

BitFax lets you create single-page or multipage documents in other Windows applications and fax them by selecting the BitFax driver as the active printer. But it requires you to rescan your standard fax after every scan.

See BITFAX PROFESSIONAL, page 70

## DataFax+ 4.1e

Trio Information Systems Inc.'s DataFax+ 4.1e offers a handful of neat features you won't find in the other programs reviewed here. For example, the program provides half a dozen fax transmission statistics that can help a busy office keep a tighter accounting of fax traffic. Also, DataFax+ can grab pictures of screens from other Windows applications and pop them directly into a fax. But before you dash out to buy it, consider some of its significant disadvantages. It uses unusual terminology and requires more steps than it should to execute virtually every operation. What's more, learning DataFax+ is more difficult with its inferior documentation. The decision should be simple: If you want one of the unusual tools DataFax+ provides, give it a try. If not, spend your money elsewhere.

### PERFORMANCE: INSTALLATION AND CONFIGURATION

DataFax+ installation program is thorough and, with only a couple of exceptions, easy to follow. The program gives you a variety of setup options and tells you the results of most of your choices. A full installation requires 8.3MB of space, but the program doesn't indicate how much space is available on the selected drive. DataFax+ includes an uninstall program should you later decide to remove it.

The setup program can install macros to integrate with external word processors, and it can detect and configure your fax/modem. DataFax+ also allows you to set password protection for the program during installation.

DataFax+'s interface is more customizable than most of the other fax programs. You can resize all the program's log windows, and when you call them back up, they will have the same size and location as when you last left them. Although you can't add or remove tools from the program's toolbar, you can at least specify its location.

We wanted the Fax Manager to automatically launch the server module, but this is not an option with DataFax+. Having said that, the advantage of being able to launch the server without the Fax Manager is that it allows you to use only 2 percent of your system resources when you're not managing faxes.

On the whole, DataFax+ is easy to install and relatively customizable. The program's score in this category is lowered primarily by its failure to allow the user to check drives for available space without leaving the installation routine. **Score: Good.**

### PERFORMANCE: PREPARING A FAX

We were able to accomplish most of our fax preparation tasks, but DataFax+'s design didn't help one bit. We spent a long time searching DataFax+'s central module, FaxOffice, for a way to create a cover-page memo, only to find that this seemingly fundamental task requires the Capture module, which we assumed was only for grabbing data from other applications.

You can preview and annotate your faxes prior to sending them. Unfortunately, the program's annotation tools are relatively weak. Like most of its competition, DataFax+ lacks a spelling checker for memos.

DataFax+ is unusual in letting you import text and graphics directly to a cover-page fax, but pasting won't work. Copying the text into the fax file and pasting it directly onto the fax, you can either open a graphic file directly on a page or copy and paste through the Clipboard. Unfortunately, once you get a graphic on the page you can't resize it.

DataFax+ earns extra points for its capability to grab screenshots of screens from other Windows applications and pop them into faxes. However, the screen-capture utility crashed due to a conflict with the video driver. Our scanner limited us to scanning only one page in an operation.

DataFax+ includes macros for Microsoft Corp.'s Word for Windows and Lotus Development Corp.'s Ami Pro that allow you to print without having to switch between printer drivers. Another option is to drag and drop ASCII text or graphic files from the Windows Program Manager onto the Capture icon, which causes the program

See DATAFAX+, page 70

## Eclipse Fax 6.0a

At the top of the list of enhancements to Phoenix Technologies Ltd.'s Eclipse Fax 6.0a is the Fax Assistant, a handy utility that tests you set up unique program configurations for each person in your phone book. Unfortunately, there are still a few kinks in 6.0a, including crashes when trying to open .TIF files, an inability to automatically recognize scans, and phantom errors on importing phone books. The program provides a macro for integrating with Microsoft Corp.'s Word for Windows, but it's limited and difficult to install. Eclipse is also far from the easiest fax software to learn and is downright awkward to use for many operations, but the Fax Assistant may be rewarding enough to tip the scale for some users.

We didn't encounter any major obstacles in installing and configuring Eclipse, though there is clearly room for improvement.

The installation lets you change the target drive, but only displays the amount of free space on the default drive. It doesn't let you check for space on other drives, nor does it indicate how much space the installation requires, though it will warn you if there is not enough on your disk.

The setup program can scan for an attached modem or you can specify the modem manually. You can also select the scanner you'll use, if any. All TWAIN-compliant units will work, or any of the four following brands: The Complete PC Inc., Fujitsu, Hewlett-Packard Co.'s HP ScanJet IIc, or Microtek Lab Inc.

An uninstall utility is included with Eclipse, but it doesn't delete the Windows group or the main Eclipse directory entry. Eclipse also doesn't offer password protection for access to the program, but you can protect faxes received from specified individuals. Don't trust this rudimentary security feature with sensitive information, however, because it's easy to circumvent.

The program always opens with a blank screen, forcing you to go to the menus to summon up your Receive log—or to do anything else, for that matter. You can't resize log windows or phone book windows, and the program offers no control over what information is displayed in the Send and Receive logs.

Eclipse's demands on disk space and Windows resources include 5MB of our drive space and 3 percent of our system resources. **Score: Satisfactory.**

We found Eclipse to be very awkward for generating fax documents, particularly within the fax program itself, compared with other Windows applications.

The procedure for creating cover-page memos involves entering text in a dialog box rather than directly onto the page. You can only edit the font or adjust the layout in the dialog box. Eclipse doesn't provide menu items or buttons to copy and paste text from other applications to a cover-page memo, but it does support control-key sequences for these operations. There is no spelling checker.

You can insert a bit-mapped signature or other graphic image, though the procedure is nonintuitive and takes too many steps. You can only edit the font or adjust the view screen, and nearly every time we tried to import a .TIF file, the program crashed. Once you do get your image on the page, you'll find there is no way to resize it.

You can preview the fax after entering the text. At this point, you can access Eclipse's annotation tools, which include a text tool and a basic set of drawing tools. The text tool lets you select from any of your installed Windows fonts, though you can't use italic or bold formats. Word wrap is lost in annotation mode. Further, you can't change the level of zoom to see the entire page without first merging all your annotations into the fax.

The viewer's toolbar icons are somewhat enigmatic, but the program pops up a label identifying each icon when you place the cursor over it. You have to be patient, though, because it takes a full 2 seconds before the label pops up.

See ECLIPSE FAX, page 70



## FaxWorks Pro 3.0

**S**oftNet Inc.'s FaxWorks Pro 3.0 is exceptionally easy to learn—even for novices. In fact, FaxWorks Pro is the only program in this comparison with an installation tailored to novice users. The program also comes with a complete set of removable cue cards that explain any feature lying underneath the mouse cursor. FaxWorks Pro's ease of learning, however, is offset by a number of shortcomings: It is incapable of sending binary files, its search capabilities are relatively weak, and its cover-page editing tools are decidedly limited. Moreover, FaxWorks Pro doesn't provide macros for integrating smoothly with other Windows applications. On the whole, however, no program makes it easier to get up and running.

FaxWorks Pro offers two installation routines: a well-explained routine for novice users and a more concise routine for experienced users. Unfortunately, the process is not perfect.

FaxWorks Pro displays the amount of disk space required and the space available on the hard drive, but only after you select the drive. If you need to switch to another drive, you have to start over. FaxWorks Pro does not include an uninstall program.

On the plus side, the automatic-detection routine successfully determined our hardware setup and configured the program to work with it. FaxWorks Pro provides no password protection for access to the program or to specified faxes.

The program is not particularly customizable. It doesn't remember which logs or utilities you left open in your last session, and every time you load the program you're met with nothing but an unmodifiable toolbar and a menu bar at the top. A click on a radio button switches you from FaxWorks Pro's Receive log to the Send log, but you can't display both logs simultaneously. Also, you can't adjust the size of the log windows to display more items or customize the contents of any of the log displays. The program, with clip art and cover pages, libraries, occupies 7.5MB on disk. It used 5 percent of our Windows resources.

FaxWorks Pro does a decent job of leading the user through installing the program and getting up and running. But it does not provide much control over configuring the program to suit individual users' needs.

**Score: Satisfactory.**

Preparing a cover-page memo is straightforward, though FaxWorks Pro is limited in its capabilities. You can't, for example, enter the text directly on the cover page, and there are no controls for font type or size, indents, margins, or other formatting and layout characteristics. You can't copy and paste text from other Windows applications into a cover-page note, either.

FaxWorks Pro does a decent job of leading the user through sending it nor ship it into the program's viewer to use the annotation tools. Since the program won't allow shipping a cover-page memo into the viewer, we couldn't draw a chart on the memo. FaxWorks Pro does not provide a spelling checker, either. Only after you've received or scheduled to send a fax can you bring it into the viewer and apply FaxWorks Pro's solid, basic set of annotation tools to the image.

The annotation toolkit includes a text tool, and you can select font type and size. You can choose clip art from the approximately 200 pieces provided with FaxWorks Pro and can use external graphics files in .JIF, PCX, and DCM formats.

FaxWorks Pro supports a number of popular scanners, as you can neither preview the cover page nor memo before sending it nor ship it into the program's viewer to use the annotation tools. Since the program won't allow shipping a cover-page memo into the viewer, we couldn't draw a chart on the memo. FaxWorks Pro does not provide a spelling checker, either. Only after you've received or scheduled to send a fax can you bring it into the viewer and apply FaxWorks Pro's solid, basic set of annotation tools to the image.

Macros for integrating with Microsoft Corp.'s Word

See FAXWORKS PRO, page 71

## UltraFax 1.1

**S**oftKey Inc.'s UltraFax 1.1 is clearly the sleeper in this comparison. Although it doesn't come close to some of the other programs' power, it does have some nice advantages, such as its price. At \$49.95, UltraFax costs less than half the price of its competitors.

Of course, a low price is of very little interest to users if the program doesn't have the muscle to take care of business. UltraFax doesn't have the extras offered by its competitors—remote access to faxes, auto-forwarding, archiving tools—but it does have a very creditable bag of basic faxing chores, such as creating cover pages, scheduling fax transmissions, and viewing and annotating faxes. It's also one of the programs that is most sparing of your Windows resources. If you just need the basics, UltraFax is an exceptional bargain.

### PERFORMANCE: INSTALLATION AND CONFIGURATION

We installed UltraFax without mishap but found some potential traps. For example, UltraFax doesn't tell you how much space you need or how much is available on your drive until after you've chosen the drive to install to; you may have to exit the installation program if you choose a drive that is nearly full. The installation allows you to selectively install a number of options and offers a choice of whether to install the files in Windows directories or in a separate UltraFax directory. It does not provide an uninstall routine, but it does come with a batch file to remove DLLs.

UltraFax lost a few points for not automatically detecting and configuring the fax/modem. The program does attempt to install a custom Windows communications driver, however.

We were unable to set passwords to control access to UltraFax. Scanner setup is optional. UltraFax supports more than 50 different modems but does not support the TWAIN interface standard.

UltraFax's user interface is very customizable. You can toggle the program's tool and status bars on and off and set it to save the screen layout for the next time you start the program. UltraFax also gives you a great deal of control over what data is displayed in the program's fax logs. You can choose among nine fields to display in the In Box. Other logs offer similar options. UltraFax is very speedy when it comes to Windows resources; the program required only 2 percent of our system's resources in receive mode with the In Box displayed.

**Score: Good.**

### PERFORMANCE: PREPARING A FAX

Preparing a cover-page memo in UltraFax is easy enough, though it took us a while to figure it out.

You must first select a cover page with the Send Cover Page utility; because there are no thumbnails of available cover pages, you have to rely on descriptions of the pages. Once you've selected the cover page, entering text is straightforward. Unfortunately, the only way to insert text where the clipboard is with context-key combinations. The utility lets you preview the page but does not allow you to edit the cover page or annotate its contents.

The only way to paste graphics and text and use UltraFax's annotation tools on a fax document is in the viewer. You can open a cover page and make changes, but you have to save it as a new cover page before you can send it.

On the plus side, UltraFax's annotation tools are reasonably strong. The program allows you to select from three line widths when drawing and lets you constrain rectangles and ellipses to squares and circles. You can choose transparent, white, or black fills. You can also change fonts and formatting for text, but not for individual characters within a text box.

UltraFax does not provide any macros to relieve you of the chore of switching between printer drivers. You'll have to print to the UltraFax driver if you create a fax in another application.

Although the program listed our Hewlett-Packard Co. HP ScanJet IIc as a supported scanner, we were unable to get the program to successfully complete and file a

See ULTRAFAX, page 74

## WinFax Pro 4.0

**D**elrina Corp.'s WinFax Pro is the most powerful and flexible fax program on the market, yet it remains reasonably easy to use. You can, for example, sort WinFax Pro's fax logs on any column with a click of the mouse. You can even use WinFax Pro's logs to receive and manage your Microsoft Corp. Mail or Lotus Development Corp. ccMail traffic. You can use WinFax Pro with the phone books in Polaris Software Inc.'s PackRat or Arabesque Software Inc.'s Ecco personal information managers (PIMs) to find fax addresses. It offers a host of features not found in most of the competition, including encrypted transmission of binary files and real-time viewing of incoming faxes. Although we wish a few of the program's features were easier to use, WinFax represents the best you can buy.

WinFax Pro's installation routine shows great forethought and makes getting the program running almost completely painless. You can choose a complete, laptop, or custom installation. WinFax Pro requires 12.5MB and 7MB for the complete and laptop installations, respectively. It automatically tested our COM ports and even identified the brand name and model of our fax/modem.

The program does not allow you to require a password for access, but it does allow you to encrypt any fax transmission so that only the recipient can open it. WinFax Pro does not provide an uninstall routine.

WinFax Pro sports the most customizable interface of the programs in this comparison. The program will remember the status, location, and size of windows when you close the program so that when you load it again it's just as you left it. The program allows you to toggle the toolbar and status bar on and off, and you can decide whether to supplement the toolbar icons with text labels. WinFax Pro's logs are also very customizable. You can specify which fax details will be displayed in the logs by choosing among the 19 available data fields. WinFax Pro lets you determine what you want to display in the bottom panel of the logs, whether it is fax details, multiple thumbnails, or an actual-size display of the first page of the currently highlighted fax.

WinFax Pro is moderately demanding of Windows resources—it required 7 percent of the resources on our test system and returned all but 2 percent when we unloaded the program. **Score: Very Good.**

Sending a cover-page memo in WinFax Pro is simple. The Cover Page utility includes a listing of available cover pages and thumbnails of the currently selected cover.

WinFax Pro is the only program in this comparison that lets you enter your memo text directly on the cover page, as if you were working in a word processor. You can zoom the page, select and format fonts, and run WinFax Pro's logs are also very customizable. You can specify which fax details will be displayed in the logs by choosing among the 19 available data fields. WinFax Pro lets you determine what you want to display in the bottom panel of the logs, whether it is fax details, multiple thumbnails, or an actual-size display of the first page of the currently highlighted fax.

WinFax Pro's annotation and drawing tools equal any of its competitors'. You can draw free curves and lines in three different line thicknesses. You can also draw rectangles, squares, ellipses, and circles, all of which can be white, gray, or black, and transparent or solid. You can import images or select from a collection of 13 pre-designed icons for use in your annotations.

Scanning documents is also relatively straightforward. WinFax Pro supports the TWAIN standard, so we did not have any major problems using our Hewlett-Packard Co.'s HP ScanJet IIc. The only annoying task was having to load HP's DeskScan prior to accessing the scanner from WinFax Pro, which made it impossible to scan more than one page at a time. WinFax Pro lets you scan pages to a file or scan and direct.

WinFax Pro integrates well with external Windows applications. It eases things by providing macros for sending faxes from Microsoft's Word for Windows, Lotus' Ami Pro, WordPerfect's WordPerfect for Windows, and Microsoft Excel so that you don't have to select a printer driver or remember to reset the default printer once

See WINFAX PRO, page 71



These days, all it takes is a little success to overload your business. The more you demand of your computers, the slower things can get. Well, that's because PCs are made to be PCs. And at this point, what you really need is a server — the most efficient way to get your PCs working together.

So we'd like to introduce you to the Compaq ProSignia VS. Now, for the price of a desktop, you can get a real, industrial-

strength server made by the company who knows the technology best. (Compaq is recognized as the world leader in servers.)\*

Unlike a PC, the ProSignia VS is specifically designed for the job of powering a computer network in small- to medium-sized businesses. It's optimized for high-speed file transfers, to eliminate the finger-tapping during everyday tasks, like calling up a customer record to take an order. It also expands easily to

NOW THAT YOUR BUSINESS IS GETTING  
A LITTLE BIGGER, GUESS YOU'LL  
BE NEEDING AN OFFICE MANAGER.



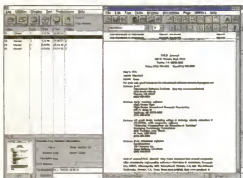
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And while most servers are complicated, the ProSignia VS can make your life easier. Our optional CD-based SmartStart simplifies the whole process of setting up a reliable system. And Insight Manager (also an option) keeps an eye on key parts, pinpointing problems *before* they can disrupt operations.

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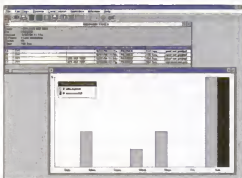
To find out how you can give your company more agility as it grows, visit an authorized Compaq reseller. If you'd like more information, or if you'd like the name of your nearest reseller, call us at 1-800-638-8258, ext. 450. We can show you the best kind of office manager: One that works as hard as you do. **COMPAQ**



**BitFax Professional's logs and viewer are effective, but the viewer's icons are a bit inscrutable.**

#### BitFax Professional

(Continued)



**DataFax+'s logs aren't especially attractive, but the program provides unique transmission statistics.**

#### DataFax+

(Continued)



**Eclipse Fax opens a fax in the viewer by double-clicking on the item's name in the Receive log.**

#### Eclipse Fax

(Continued)

### PERFORMANCE: PREPARING A FAX

Fortunately, BitFax includes macros for sending faxes directly from Ami Pro, Excel, and Word for Windows without having to change your printer driver. You can also send a fax by dragging a file from the File Manager and dropping it onto the Transmittal Fax icon.

Overall, it is easy to create a fax with BitFax, but layout and annotation tools are lacking. There is also no way to attach a binary file. **Score: Satisfactory.**

to automatically generate a fax and prepare it for sending.

The difficulties we encountered in using the fax-creation tools and the fact that DataFax+ doesn't allow you to attach binary files to faxes prevent the program from receiving a better score. **Score: Satisfactory.**

Eclipse lets you scan single or multiple pages to the viewer or to a file. You can also fax pages directly as you scan them, or have optical character recognition (OCR) performed immediately. Unfortunately, we had trouble getting Eclipse to work with our HP ScanJet IIc scanner.

Eclipse doesn't integrate well with other Windows applications, and it was not capable of attaching a binary file to a fax. **Score: Satisfactory.**

### PERFORMANCE: PREPARING AND USING THE PHONE BOOK

We found several shortcomings in trying to use the phone book. For example, there's no icon for calling up the phone book either in the BitFax program group or any of the logs' toolbars.

You can sort the phone book by name or company and search the name, company, and phone number fields. BitFax lets you create multiple phone books and phone book groups.

BitFax imports dBase, WinFax Pro, and delimited ASCII files. The program successfully brought in our ASCII text file of 500 names and numbers, though we had to know in advance the arrangement of our fields to match them with BitFax's phone book fields.

BitFax lets you print either the currently selected records or all records in the book. You can adjust margins and even select a font at print time.

BitFax doesn't integrate its phone book with other Windows applications. You cannot, for example, use your personal information manager's (PIM's) phone book as your fax phone book, or vice versa. You can, however, use any dBase-based phone book from another product. **Score: Good.**

DataFax+'s phone book generally suffers in comparison with most of its competition. It requires not only a name and fax number but also a company name before it will save a new entry. You can easily create group entries and multiple phone books.

The program was capable of importing our comma-delimited ASCII file, though we found the process bewildering and inflexible. We were disappointed to find no way to combine separate first and last names into DataFax+'s single name field. Further, DataFax+ required each record to have data in the name and fax number fields for the record to be imported at all.

You can sort the entries either by name or company and you can search for specific entries by name. Unfortunately, you can only search when you summon the Dialing Directory from the Captive utility. If you call it up from FaxOffice, there is no search capability.

You can print your entire list of contacts, but there is no way to print single records. DataFax+ does not allow you to use a personal information manager (PIM) as your fax phone book, nor can you use DataFax+'s Dialing Directory with other programs. **Score: Poor.**

Eclipse's phone book is a curious mixture of useful features and unexpected weaknesses. On the plus side, you can maintain multiple phone books and create phone book groups for sending to a number of people in a single stroke. Eclipse Fax can import records in dBase and WinFax file formats, as well as delimited ASCII files.

Eclipse doesn't provide a traditional list view of your phone book entries. When you call up the phone book, you see a blank view of a single record and can summon a scrollable list of available contacts. You can search for a specific contact by entering one or more letters, but you get only the first matching entry, not all matching entries. What's more, Eclipse doesn't allow you to search on any but the name and company fields, and you can't sort at all.

Back on the plus side, the program lets you print the current record or all records in any of three different layouts. Also, you can link Eclipse's phone book to an external dBase file for faxing to entries contained in that file. What's more, you can use the phone book from Polaris Software Inc.'s Pack Rat for faxing through Eclipse. You cannot, however, use Eclipse's phone books for handling E-mail messages. **Score: Satisfactory.**

### PERFORMANCE: COVER-PAGE CREATION AND MANAGEMENT

BitFax doesn't have a cover-page editor. You're restricted to modifying a single, standard cover page with limited controls. You can save different messages to place on the cover page, but you can't save different cover pages with logos and other graphic elements. Further, BitFax doesn't provide any predesigned cover pages.

When sending a cover page, you can insert an image at the top of the fax and another at the bottom, but you can't resize or move these images once they are placed.

BitFax doesn't provide a thumbnail utility for tracking and selecting cover pages. **Score: Poor.**

DataFax+ doesn't provide any predefined cover pages. On the other hand, it delivers a very strong set of cover-page design tools. You can move objects around on the page and resize them at will. DataFax+ provides special layout capabilities, such as the capability to overlap objects and send selected objects to the back or front. A snap-to-grid feature makes it easier to align objects on the page, and you can also align objects in relation to other objects.

Though powerful, the cover-page editor was not particularly easy to use, and we found the toolbar icons obscure. Inexplicably, names for cover pages can only contain numerals. **Score: Good.**

Eclipse comes with a selection of 25 unmodifiable cover sheets. There is no dedicated cover-page manager for creating new cover pages; instead, you annotate the cover page in the viewer. The program doesn't offer thumbnails when you're trying to figure out which fax file to open, so you'll have to rely on the file names.

You can import graphics and draw lines and other shapes, but once these are in place, you can't move or resize them.

Eclipse lets you create sheets for second and subsequent pages that employ graphic elements, a unique feature we'd like to see other programs emulate.

**Score: Satisfactory.**

### PERFORMANCE: SENDING AND RECEIVING FAXES

BitFax's controls for sending and receiving faxes are relatively strong and easy to use. We sent our different types of faxes without encountering any problems. BitFax provides you with extensive control over how and when it sends faxes. It offers settings for sending in fine or standard resolution, adjusting speaker volume, specifying

See BITFAX PROFESSIONAL, page 76

DataFax+ gives you a lot of control over how you send and receive faxes, but there is no centralized configuration utility and you'll have to do some chasing around to get things set up the way you want.

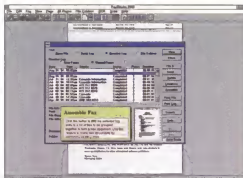
Sending a fax is easy but not obvious. We discovered that closing the preview window brings up the prompt to

See DATAFAX+, page 76

Eclipse's procedures for sending cover-page memos left us feeling a bit like we were stepping through elevator doors with our eyes closed. We never felt, but we were often anxious. The program's Send/Quick Note dialog box, for example, has you click Send before it allows you to type in your message.

See ECLIPSE FAX, page 76

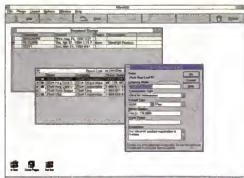




**FaxWorks Pro's** easy-to-use Receive log provides pop-up notes and thumbnails of highlighted faxes.

#### FaxWorks Pro

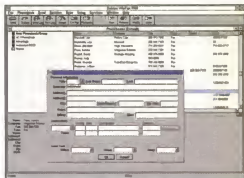
(Continued)



**UltraFax** offers a list view of phone book entries, but the program offers no search tools at all.

#### UltraFax

(Continued)



**WinFax Pro's** pop-up form allows you to search by any data field or multiple criteria.

#### WinFax Pro

(Continued)

### PERFORMANCE: PREPARING A FAX

for Windows and Lotus Development Corp.'s Ami Pro are available on SoftNet's BBS but are not included with the program. If you don't have one of these, you'll have to switch to the FaxWorks Pro printer driver.

FaxWorks Pro allows interrupting the sending process to preview the fax, make annotations, add graphics, or attach pages. However, it did not allow us to attach a binary file to our transmission. **Score: Satisfactory.**

scan. We couldn't fall back on TWAIN compliance because UltraFax doesn't support it. It does not allow attaching binary files for transmission unless the recipient is also using UltraFax. **Score: Poor.**

you've finished faxing.

Finally, WinFax Pro was one of the few programs we examined that supports binary file transfers. Binary files are attached to faxes by selecting them from a pop-up directory list. **Score: Very Good.**

### PERFORMANCE: PREPARING AND USING THE PHONE BOOK

Adding entries to FaxWorks Pro's phone book is straightforward.

FaxWorks Pro allows you to maintain multiple phone books and groups of multiple users for batch sending. You can also assemble a group from different phone books.

You can call up a scrollable list of contacts, but there is no way to sort the phone book. The only way to search the phone book is to enter a few characters in the name field and hit the Tab key. The program will return only the first matching record, not all matching records.

Importing phone book data from a delimited ASCII file is not difficult, but you'll have to figure out ahead of time what fields are going to end up where because there's no field preview. In addition to ASCII files, FaxWorks Pro allows you to import dBase files and records from Symantec Corp.'s Act phone books.

You can print FaxWorks Pro's entire phone book, but not individual entries.

The program is designed to work with the phone books of three personal information managers (PIMs): CrossTies Software Corp.'s CrossTies, Paradigm Systems Inc.'s OnSchedule, and Polaris Software Inc.'s PackRat. **Score: Satisfactory.**

UltraFax's phone books cover most of the basics, but there are some major file importing flaws.

You can add individual entries, create groups of multiple users for sending en masse, and create multiple phone books. The phone book records aren't customizable, and there are no fields for recording contacts' addresses.

The Phone List folder displays all records in a list format, sorted alphabetically by name. You can sort by other criteria, such as company, but you have to dig down several layers to do it. There is no way to search the phone book.

You can print selected records or an entire phone book.

The program utterly failed our import task. UltraFax claims to import both the Intel Corp. Phone Book (.PB) format and ASCII-delimited files. But when we tried to import our ASCII file, all UltraFax did was bring in one blank record.

UltraFax is incapable of sharing phone books with personal information managers (PIMs) or any other outside applications. **Score: Poor.**

WinFax Pro's phone book is the most powerful, flexible, and one of the easiest to use we've seen.

In the phone book log, you can display contact information, rearrange and resize data columns, and sort the entire list by name or company. WinFax Pro's search tools are unparalleled. You can search on any combination of data fields.

The process of creating groups is simple once you understand it. You add members to a group by dragging them from the list of entries to the group name.

WinFax Pro imported our delimited ASCII records without a problem. The program lets you select which fields to import, and you can specify the data types and field delimiters. WinFax Pro also imports files from dBase, Lotus Organizer, and Communicating Applications Specification (CAS).

One of WinFax Pro's special strengths is its capability to share contact information. WinFax Pro can access phone directories in dBase format and in a variety of PIMs that support WinFax, including PackRat and Ecco. WinFax Pro also lets you store Microsoft Mail or Lotus cc-Mail addresses in WinFax's phone book. You can also send mail from WinFax Pro and view incoming mail as entries in WinFax Pro's logs. **Score: Very Good.**

### PERFORMANCE: COVER-PAGE CREATION AND MANAGEMENT

FaxWorks Pro comes with a library of 10 predesigned cover pages. You can also create new cover pages based on the existing ones, but you can't delete or rearrange the elements already placed on page.

You can, however, add as many new text and graphic elements as you like. The text tool allows you to select the font type and size. Approximately 200 clip-art images are provided with the program. Through a somewhat awkward procedure, you can also import your own image files. The only element we were unable to add to a cover page was fields for automatic insertion of data from the program's phone book or system information. **Score: Good.**

UltraFax comes with a dozen attractively designed cover pages. Although the program does not provide a thumbnail library for flipping through the available pages, it does offer a separate Cover Page log that lists all the pages and their descriptions in one place.

You can open existing cover pages in the viewer and add elements to a chosen page. Unfortunately, you cannot move or resize elements already on the page, nor can you resize imported graphic images.

Text elements are easily managed because you insert them directly on the page. You can also insert data fields into the cover-page text box. **Score: Satisfactory.**

In this category, too, WinFax Pro bowls over the competition. WinFax Pro ships with more than 100 predesigned cover pages.

It's easy to create your own custom cover page or modify an existing one. Inserting a graphic image is straightforward, and you can specify how you want the image scaled. The only problem we had was figuring out which button to use. You can move and resize all images on the page at will.

You can also add text objects, and WinFax Pro offers full access to Windows fonts. You can pick from 22 variables to insert in the cover page, including all the data fields from the phone book. **Score: Excellent.**

### PERFORMANCE: SENDING AND RECEIVING FAXES

We found FaxWorks Pro to be generally easy to use and all our transmission operations were completed without mishap. The program provides the standard controls over sending and receiving faxes.

The Send portion of the utility lets you specify the maximum number of retries the program should attempt

UltraFax doesn't get fancy with controls for sending and receiving faxes. For example, you can't configure the program to automatically compress, forward, or perform optical character recognition (OCR) on received faxes, although you can set it to delete faxes automatically after sending.

WinFax Pro provides more than the expected set of controls for handling transmissions. When receiving faxes, WinFax Pro displays the station sending the fax and a real-time update of the progress of the transmission. WinFax also uses a special error-correction mode for overcoming transmission problems.

See **FAXWORKS PRO**, page 79

See **ULTRAFAX**, page 79

See **WINFAX PRO**, page 79



# THEY SAY VALUE IS GETTING WHAT YOU PAY FOR. WE SAY IT'S GETTING MORE.

If the nineties are about getting value for your dollar, then the Ascentia™ 800N is truly the notebook of the decade.

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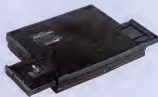
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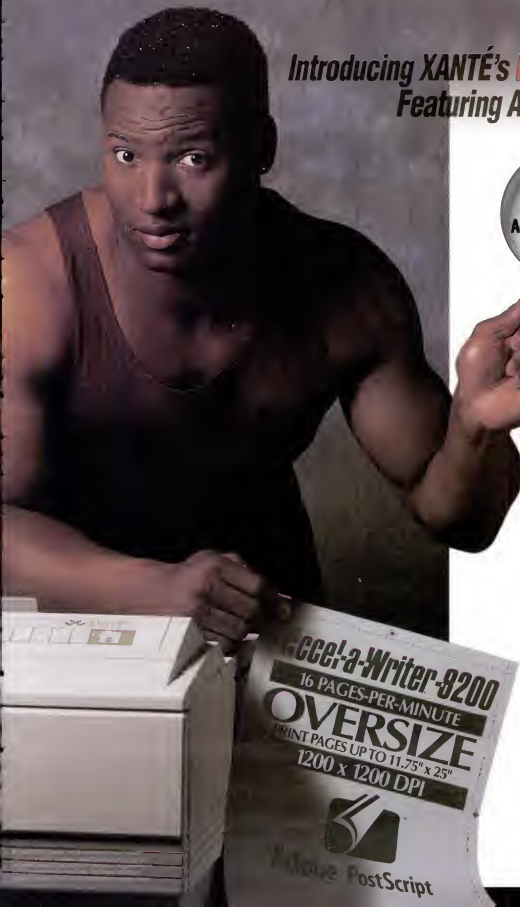
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### BitFax Professional (Continued)

fyling the number of retries to attempt if the line is busy, and specifying the length of time the program should wait between attempts.

To save paper at the other end, BitFax can strip out blank lines when the fax is transmitted or leave a specified maximum number of consecutive blank lines before it starts stripping them out. BitFax can also squeeze four incoming faxes onto one sheet.

You can control the makeup of the banner at the top of the fax, inserting any of 15 variables. Options include sender and recipient information, time and date stamps, page numbers, and even the resolution of the fax.

When preparing a fax for transmission, you can opt to schedule it for a later date and time or at the next low-rate period.

BitFax is also flexible in receiving faxes. You can direct the program to automatically load in receive mode or allow you to answer fax calls manually. The Receive Manager offers a number of controls for handling received faxes. When faxes arrive, for example, you can set the program to issue audible and visual cues and take any combination of four actions: anti-aliasing (for easier reading), printing, performing optical character recognition (OCR), or forwarding the fax to another party.

**Score: Good.**

BitFax provides generally strong tools for managing faxes, though we found that the program is inconsistent in how it handles folders and logs.

You can create as many new folders as you like in BitFax's Fax Manager, and you can move fax documents among those folders by using simple drag-and-drop procedures. But what makes Fax Manager somewhat unusual is that faxes sent and received actually reside in the Main Folder; items in the Transmit and Receive logs are only pointers to items in the Main Folder.

There are a few other differences between folders and logs. The Transmit and Receive logs display both a list view of the faxes and a thumbnail view with details of the currently highlighted fax. In contrast, the folders display only thumbnails of the first page of each fax. Because of the folders' one-list view of faxes, you cannot sort the contents of folders as you can in the Transmit and Receive logs.

One feature logs and folders have in common, however, is that you can search both according to fax name, comments, and the sender or recipient of the fax. In addition, you can specify a date range for the search.

Once we located a fax we wanted to view, calling it up was no problem. Double-clicking on either a log entry or a thumbnail in a folder opens the viewer with the fax loaded. The viewer offers a dozen or so icons for displaying and manipulating the fax.

There's also a nifty Magnified Viewer feature. Click on the magnifying glass icon in the toolbar and up pops a window and an outline box. Drag the outline box to the portion of the fax you want to view and the area under the box is magnified.

Icons are also available for rotating, flipping, and anti-aliasing the fax. You can print the fax directly from the viewer or from either of the program's logs. In the latter case, you can mark multiple faxes for batch printing.

We found it difficult to decipher some of the toolbar icons' functions. BitFax and BitFax did not provide any cues—labels, pop-up explanations, or status-line descriptions—to tip you off.

BitFax doesn't have a dedicated archiving utility. The Receive Manager, however, compresses received faxes by default; to create a compressed archive, just create an archive folder for storing documents. If you prefer speedier display of your faxes, you can switch off the automatic compression and manually compress faxes when you save them to disk.

You can let BitFax to automatically delete log entries, their associated fax files, or both after a specified period of time.

BitFax allows you to save faxes in .DCX, .PCX, .TIF, and .BMP formats, though you must have the fax in View Fax before you can do so. **Score: Good.**

See BITFAX PROFESSIONAL, page 80

### DataFax+ (Continued)

#### PERFORMANCE: SENDING AND RECEIVING FAXES

send the fax. Sending from the phone book is somewhat more intuitive.

You can add to a group of users, though we found a few limitations to this feature. Although it's easy to create a group, it's difficult to exclude one or two users from receiving the transmission. You can create a group on the fly by selecting multiple recipients.

Scheduling faxes for later transmission is a simple matter of clicking a button in the Dialing Directory and entering the desired transmission date and time. You can also set the number of attempts the program should make to send the fax and the period of time to wait between tries.

DataFax+'s control over fax reception is also strong. You can specify whether the program should beep, blink its icon, and/or post a message when a fax comes in. You can also set the program to automatically perform optical character recognition (OCR) on faxes when they arrive.

You can configure the program to automatically print incoming faxes or forward them to another number. Finally, DataFax+ offers the unique capability to automatically reject incoming faxes from specified station IDs, a good way to eliminate the increasing irritation of junk faxes. **Score: Good.**

#### PERFORMANCE: MANAGING FAXES

DataFax+'s fax-management capabilities are uninspiring. The fax directory structure is efficient but largely inflexible. You can't create custom folders for storing faxes, nor can you generate rules for automatically assigning faxes to folders.

In DataFax+, all faxes are automatically filed in one of four logs: Inbound, Outbound, Transmitted, and Errored. Each log displays the sender's and recipient's name and phone number, the time, and the date for each fax. When you highlight a fax, the log displays the fax's details, including the number of pages.

DataFax+'s logs won't display thumbnails along with the event entries, but you can see thumbnails in the fax viewer. Once you have the fax in the viewer, you can display it in actual size, full-page, two pages per screen, or screen per page. You can rotate, flip, and invert pages. Surprisingly, however, DataFax+ does not provide a zoom tool for expanding only a selected portion of a fax, nor is there an anti-aliasing utility for enhancing the fax image.

DataFax+ logs are easily sorted, though changing the sort order is too complicated. The sort criteria available vary somewhat among logs, but all logs allow sorting by job number, date, and time.

You can configure DataFax+ to automatically perform OCR and indexing on inbound and outbound faxes. The program can search these faxes with Boolean operators, but only if they've been converted to ASCII or American National Standards Institute (ANSI) text.

You can print an entire log or selected faxes by clicking on the Print icon in the toolbar. The toolbar can, however, be customized. You can also set up shortcuts on the FaxOffice menus. Similarly, you can delete a highlighted fax, all selected faxes, or all faxes in the log by clicking on the trash can icon, but the menu option for this is buried three levels deep. The System Setup utility allows you to configure the program to automatically delete faxes after transmission, but there is no equivalent feature for automatically deleting received files after a specified period of time.

DataFax+ falls short by not offering traditional methods of archiving fax documents, though you can set the program to archive a list of faxes you have sent. This retains a record of the fax transmissions—not the faxes themselves—and the only way you can see these archives is by printing them.

One of DataFax+'s most interesting extras is its statistical reports of fax transmission activity. You can create bar or line graphs showing both attempted and successful fax transmissions broken down in a number of ways.

Finally, you can save any fax in a variety of formats, including .BMP, .TIF, .DCX, or .PCX. **Score: Satisfactory.**

See DATAFAX+, page 80

### Eclipse Fax (Continued)

Eclipse provides all the expected configuration controls for sending faxes. Your options include one of two resolution settings, specifying the page size, and controlling the modem speaker. You can also specify how many times the program should attempt to send a fax, how long to wait between tries, and how long to wait for a carrier once the call gets through.

Eclipse can automatically answer incoming calls after a predetermined number of rings and can automatically print received faxes and/or forward them to another fax machine. If you don't want to load the program in auto-answer mode, you can turn the feature off.

Eclipse earns extra points for its new Fax Assistant, a powerful utility for presetting actions to take place when you send or receive faxes. Each of Fax Assistant's "cards"—Send, Receive, Fax Saver, CC, and OCR—allows you to custom-tailor the program to handle faxes differently for each contact. The Send and Receive cards allow you to select parameters for sending and receiving faxes; the Fax Saver Card provides options for saving faxes; the CC card lets you automatically forward copies of sent or received faxes; and the OCR card provides automatic optical character recognition for sent or received faxes. The program does not support drag-and-drop faxing from the File Manager. **Score: Good.**

Eclipse offers a respectably strong set of tools for managing faxes, though many of the tools are implemented in unexpected ways. We found that the program's fax-management tools—with the notable and powerful exception of the Fax Assistant—are relatively awkward. Basic commands are predictable. Sent faxes are automatically stored in Eclipse's Send log and, as expected, received faxes are stored in the Receive log. Although Eclipse doesn't allow you to create additional logs for storing faxes, you can specify a directory on your hard drive for this purpose.

The program will display both the Send and Receive logs at the same time, but they are initially displayed directly on top of each other—an awkward arrangement. The logs do not offer thumbnail views to help identify the fax you're looking for; you need to use the viewer to do this.

Parts of the viewer are counterintuitive. You can't zoom out with the zoom button, for example—you can only zoom in. To return to a pulled-back view, you have to select the Best Fit or Full Page commands, accessible either from the View toolbar or from a pull-down menu. It's also curious that the zoom tool icon only appears in the Drawing Tools toolbar even though you can still zoom with the View toolbar loaded. The View toolbar also includes icons for rotating the page and for performing an anti-alias operation on the fax to make it easier to read.

Once you've viewed a fax for the first time, Eclipse offers you the chance to store it in an index. The index lets you store fax names as long as 50 characters, and you can attach notes. There are, unfortunately, no tools for searching for faxes, though you can sort the index of faxes either alphabetically by sender/destination or by the fax's date and time. You can maintain multiple indexes and view either a single index or all indexes at once.

Although Eclipse offers no formal archive facility, you can use the Fax Assistant to configure the program to save faxes in Group 3 or Group 4 compressed .tiff formats in named indexes. Compressed faxes take a bit longer to call up, but we found the delays tolerable. You can also save faxes in .PCX, .DCX, and uncompressed .TIF formats.

You can use the Fax Assistant to automatically delete faxes a specified number of days after they are received. This option can be set for all senders or varied for individual senders in Group 3 or Group 4 compressed .tiff faxes from your boss for a longer period of time than faxes from other people. There is no option for keeping a record of the fax transmission if you delete the fax pages. **Score: Good.**

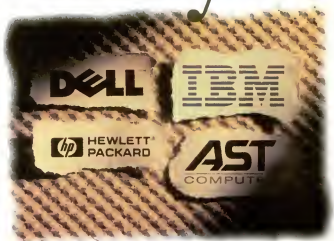
See ECLIPSE FAX, page 80

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FaxWorks Pro  
(Continued)UltraFax  
(Continued)WinFax Pro  
(Continued)

## PERFORMANCE: SENDING AND RECEIVING FAXES

when trying to send a fax, the length of time to wait between attempts, and the minimum and maximum transmission rates.

You can set the Receive portion of the utility to automatically receive faxes, notify with a beep and a pop-up message that a fax has arrived, and print the fax upon receipt. You can specify the number of rings FaxWorks Pro should let pass before answering. The program can also automatically forward received faxes to another machine. You can configure FaxWorks Pro to automatically compress all sent and/or received faxes.

Any fax transmission can be scheduled for a later time. Both the Quick Fax and Send dialog boxes offer fields for entering a transmission date and time.

The program can send and receive faxes in the background, though we did encounter one major trapdoor in receiving faxes. When a fax is coming in, FaxWorks Pro places a stop sign symbol just under the down arrow of the view window's scroll bar. Clicking on the symbol cancels the incoming fax—which is all too easy to do while trying to scroll a displayed fax.

FaxWorks Pro does not support the sending or receiving of binary files, nor does it support drag-and-drop operations from the Windows File Manager. **Score: Good.**

When sending faxes, you can specify how many attempts the program should make to deliver a fax, how long it should wait between attempts, and how long it should wait for a connection.

It's also easy to schedule a fax for later transmission. UltraFax could make it even easier, however, by providing a calendar and a clock for setting the date and time. As it is, you must either enter the information manually or scroll through dates and times.

You can specify the makeup of the banner at the top of the fax and insert any of 15 different data fields, though the program doesn't let you specify where to place the data.

UltraFax also covers the basics for receiving faxes. You can specify the number of rings the program should wait for before answering a call and control whether you'll receive a fax notification message. You can also set the program to automatically print received faxes.

UltraFax offers a few other extras: You can have it automatically clean borders, remove headers, build thumbnails for the multiple-pages option in the viewer, and wipe out spots on received faxes.

**Score: Satisfactory.**

You can summon a preview of the fax you are sending and toggle a header on or off. You can also schedule transmission for a later time.

WinFax Pro allows you to send a fax from another Windows application by selecting the WinFax Pro printer driver or macro. Another option is to drag and drop files from the Windows File Manager onto the WinFax Pro icon.

Sending to a single user or a group of users is simple, and you can select from multiple phone books. Unfortunately, WinFax Pro doesn't make it obvious how to eliminate members from a group.

WinFax Pro gives you a lot of options for receiving faxes. You can set the number of rings before the program answers calls and select audio and visual notification that a fax has arrived. It can automatically print, forward, or perform optical character recognition (OCR) on arriving faxes, and you can even view the incoming fax in real time. You can also configure the program to forward faxes from a specified sender.

WinFax Pro offers the unique capability to set your workstation in remote-retrieval mode, call in, and automatically download received faxes. WinFax Pro lets you set a password to protect against unauthorized access. **Score: Very Good.**

## PERFORMANCE: MANAGING FAXES

FaxWorks Pro's storage structure is very similar to that of Phoenix Technologies Ltd.'s Eclipse Fax 6.0a. It offers Send and Receive logs, and you can also create custom folders. When you file faxes into FaxWorks Pro's custom folders, you can also attach notes and keywords to them.

All of FaxWorks Pro's logs and folders are displayed in the same window. One obvious drawback to this is that you can't display the Send and Receive logs at the same time. On the other hand, FaxWorks Pro does provide a thumbnail view of any highlighted fax, regardless of whether you're in the logs or the File Cabinet (which is where custom folders are created and stored).

The logs offer a list view of faxes and a thumbnail of the currently highlighted fax. You can search the logs by sender and status and restrict the search by date, time, and/or page range. The File Cabinet utility offers a lookup list for selecting the custom folder you want. You can search faxes for keywords and connect the keywords with logical operators. Unfortunately, the File Cabinet doesn't have the logs' capability to search by sender and status. FaxWorks Pro doesn't provide any tools for sorting faxes in either the logs or the File Cabinet, except when printing.

You can print a selected fax or multiple faxes. You can also specify that all sent and received faxes be deleted after a specified number of days. (Received faxes will only be deleted after you've viewed them.) FaxWorks Pro doesn't provide an archive utility as such, but you can accomplish the same purpose by creating a custom folder for archiving, compressing all faxes as you move them into the folder. FaxWorks Pro can also automatically compress faxes after they've been sent or received.

The viewer offers all the expected tools for zooming and rearranging faxes. You can scale the fax to the width of the screen and display a full page, two pages, or all pages. Multiple views are particularly handy if you want to take advantage of FaxWorks Pro's unusual capability to rearrange pages in a multipage fax.

Deletion of the current fax or of an entire enclosed area will be zoomed on the screen. To return to a pulled-back view, you must select one of the page icons from the toolbar or right-click the mouse.

Icons are also offered for rotating the fax, and we found FaxWorks Pro to be one of the fastest products at performing this operation. The program also offers an anti-aliasing feature—strangely labeled "Grayscale"—for improving the readability of fax images.

Any fax document can be saved in a variety of formats: compressed and uncompressed, TIF, PCX, and .DGC. Although we'd like to be able to sort logs and display multiple logs simultaneously, we found FaxWorks Pro to be a very competent fax manager, and certainly one of the easiest to learn and use. **Score: Good.**

UltraFax's fax directory structure is simple and easy to grasp, though a bit inflexible. In addition to the In Box and Out Box, there's a cover page log and a Document Storage folder for faxes you don't want to store in the In and Out Boxes.

You cannot create custom folders, nor can you write rules for deleting faxes after a specified time or for automatically assigning faxes to Document Storage.

UltraFax does, however, allow drag-and-drop procedures for many fax-management chores. You can drag and drop a document from within the fax program, but not from the Windows File Manager. If you drag a document to the Out Box, a dialog box pops up for you to send that document. If you drag a document to the Phone List, the document is sent to the currently highlighted entry. Unfortunately, there's one critical gap in UltraFax's system: The program does not retain a copy of the cover-page memos you send, only a record of the transmission.

UltraFax offers a solid set of tools for sorting and locating fax documents. You can sort any log or folder on up to two criteria, which can be any of the data fields. You can also assign keywords to faxes to use in searching. Once you search with a keyword, however, beware: It remains active until you change it, and there's no on-screen indicator warning that the filter still applies.

The program displays single, dual, or multiple (up to 18) pages at once, but the latter is only functional if you have configured the program to create thumbnails of faxes. UltraFax offers an unusual but functional pair of zoom controls: one button for zooming in at preset levels and another for zooming out. There's also a magnifying glass tool that allows you to zoom in on selected areas of the fax. On the whole, we found these zoom tools more difficult to use than necessary.

There are also commands for rotating, flipping, and inverting the displayed pages. An Enhance command results in the fax being anti-aliased to make it more readable. Unfortunately, these commands are hidden under the Edit menu, not the Display menu.

You can tag single or multiple faxes in UltraFax's logs for deletion, and the program handsily provides a Delete button right on the toolbar. Unlike some of the other programs, however, UltraFax doesn't distinguish between fax events and fax documents when you make deletions. UltraFax is the only program in this comparison that doesn't allow you to delete faxes automatically after a specified time, so you'll have to do most of your housecleaning manually. Nor does UltraFax provide any compression tools, although the native file format is compressed by default.

Faxes can be saved to any of four non-native file formats: DGC, PCX, TIF, or BMP. **Score: Satisfactory.**

WinFax Pro has a stronger collection of fax-management tools than any of the competition.

WinFax Pro places all incoming faxes into the Receive log, all sent faxes into the Send log, and all pending faxes into the Outbox. In addition, you can create any number of custom folders for storing faxes. Unlike faxes placed in WinFax Pro's default logs, any faxes placed in custom folders are automatically compressed. The price you pay for compression is slower access. When you create an archive folder, the program prompts you to specify whether the fax pages should be saved along with the record of sent and received faxes. You can also specify whether to save binary attachments.

WinFax Pro does not offer rules for automatically assigning documents to folders, but it does make filing very easy. Locating faxes is also straightforward and simple. You can sort each log or folder, in ascending or descending order, on up to three of its data fields in hierarchical order. Another option lets you sort on the fly by simply double-clicking on the column name, though the sort is automatically performed in ascending order.

WinFax Pro lets you search for documents by setting up filters; you simply enter a search criteria in one or more fields. Using the Filter option, you can name the search and save it for later use. Folders with filters applied to them contain a tiny filter symbol, though we'd like to see a more obvious and difficult-to-overlook indicator.

Keywords, descriptions, and billing codes are attached to faxes by highlighting the fax and clicking on Log/Modify. This individualizes every fax you log even record. To print a particular fax, you must first call it up in the viewer, then select Fax/Print. Printing individual events (records of sent and received faxes rather than the faxes themselves) and entire logs is performed from the log window by accessing the Fax menu.

Deletion operations are also performed from the Log window, and you can specify whether you want to delete the fax pages or just the pages and the log event record. You configure WinFax Pro to automatically delete fax pages alone, or both records and pages, after a specified number of days, by turning to the Log Setup dialog box. Finally, you can save faxes in any of three file formats in addition to WinFax Pro's own .FXS format: PCX, TIF, and BMP. **Score: Very Good.**



**BitFax Professional**  
(Continued)**DataFax+**  
(Continued)**Eclipse Fax**  
(Continued)**PERFORMANCE: OPTICAL CHARACTER RECOGNITION (OCR)**

BitFax's AnyFax OCR engine had average speed and 90 percent accuracy. It is relatively flexible in its OCR controls; you can, for example, set it to recognize an entire fax or selected pages only, either manually or automatically. You can also select zones for OCR.

BitFax can handle documents in up to 11 languages and can save output in dozens of word processor and spreadsheet formats. You can have the program automatically check spelling, then load your word processor or other application with the recognized text. There is, however, no mechanism for training the OCR program to read new characters or fonts. **Score: Good.**

DataFax+ turned in the fastest recognition times of any program in the comparison but had only 88 percent accuracy. DataFax+'s file format support was more limited than that of some of the competition, but the program does support all the major Windows word processors as well as Microsoft Excel and Lotus 1-2-3. The program can also recognize text in 11 languages. It allows you to manually zone partial pages for recognition or to recognize entire pages with automatic column zoning. You can configure the program to pop up an OCR Consultant window that asks you to correct or confirm suspect characters. The editing window doesn't include a spelling checker, but the program provides a verifier to compare the recognized fax to the original. **Score: Satisfactory.**

Eclipse is one of the few fax programs that offers trainable OCR, but with an accuracy of only 87 percent, you'll probably need this capability. It was also one of the slowest of the fax products to complete our tests.

Eclipse's text-recognition program supports 11 languages and can save files in more than a dozen file formats. It can automatically recognize columns of text, or you can manually specify areas on a page for recognition. There is no spelling checker.

After performing OCR, the program lets you edit the text in its built-in editor, launch the text in the appropriate application, or save the recognized text directly to disk. **Score: Satisfactory.**

**PERFORMANCE: SPEED**

BitFax turned in one of the slower overall times in this comparison, although it was unusually fast at rotating and saving a fax, taking one-half the time of the next fastest program. Unfortunately, it lost points because it crashed when we tried to print faxes to our PostScript printer. **Score: Satisfactory.**

Although DataFax+ was one of the fastest to spool and print faxes, its other speed scores placed it in the middle range. **Score: Good.**

Eclipse is fairly fast at most fax-management and viewing tasks. It especially excelled at sending a five-page cover page. The program was very slow at printing, however, and lagged behind the competition in the rotate-and-save operation. Overall, Eclipse turned in the second-fastest times, outpaced only by SoftNet Inc.'s FaxWorks Pro 3.0. **Score: Very Good.**

**DOCUMENTATION**

BitFax's users' guide and getting started manual are generally well written, clearly illustrated, and easy to follow, although the pictures of the phone book don't match what's on the screen. We felt a few important topics were missing from the index. BitFax could have also provided more on-screen cues, especially relating to the functions of toolbar icons.

The program's on-line help is strong, offering clearly written explanations and illustrations, solid search tools, and hypertext linking. **Score: Good.**

DataFax+ is difficult to learn, and the documentation makes it even more difficult. The users' guide is dense and inadequately indexed. For example, there is no listing for Print Report even though there is a Print Report utility.

The functions of DataFax+'s toolbar icons are a continuous mystery to us, and the program provides no pop-up labels or status-line messages to assist the user. The on-line help that is provided is well written but has many of the same gaps as the manual. **Score: Poor.**

Eclipse's new manual is well written and indexed and is accompanied by an adequate number of illustrations. The manual's tutorial section is too brief, but the troubleshooting chapter is helpful.

The program's on-line documentation is only adequate, though you can search on topics and there are a moderate number of hypertext links. We often found the explanations too terse, however, and there is a paucity of illustrations. Finally, we felt the program would be much improved with better on-screen cues. **Score: Satisfactory.**

**SUPPORT POLICIES**

Cheyenne Software backs up BitFax with a 30-day money-back guarantee. The company provides unlimited free (but not toll-free) telephone support from 8 a.m. to 6 p.m. Pacific time. The company also provides support through a fax-back service, a BBS, and a forum on CompuServe. **Score: Very Good.**

DataFax+ comes with a 90-day money-back guarantee. Trio offers unlimited free (but not toll-free) telephone support from 9 a.m. to 6 p.m. Eastern time. Support is also available on the company's BBS, CompuServe forum, and the Internet. **Score: Very Good.**

Eclipse is backed by a 60-day money-back guarantee. Phoenix offers unlimited free (but not toll-free) telephone support from 9 a.m. to 5:30 p.m. Central time. **Score: Good.**

**TECHNICAL SUPPORT**

We were never able to reach technical support without first leaving a message on an answering machine. Although Cheyenne's support staff always returned our call within 2 hours, we were unable to continue until we received the call or, when the call did come, it interrupted us in whatever we had moved on to.

However, we found the support staff quite knowledgeable about the product and eager to help. **Score: Satisfactory.**

We found it easy to reach Trio's technical support staff, but that's the best we can say about our experiences. On our first call, the staff person wasted considerable time asking for irrelevant information. When we objected, she said she was recording the data to maintain user profiles. We felt the company shouldn't have been using our expensive long-distance time for this. The staff person was only able to write down our questions and ask us back with the answers. On subsequent calls, we found the staff equally hesitant and ill informed. **Score: Poor.**

Phoenix's support staff always answered our calls quickly, and they clearly knew the product. Each of our questions was answered promptly and accurately, and in one instance — our problem importing TIF files — the staff person was able to suggest a work-around. **Score: Very Good.**

**VALUE**

At \$129, BitFax has the same list price as three other fax software packages in this comparison: DataFax+, FaxWorks Pro, and WinFax Pro. BitFax is neither the strongest nor the most full-featured product of the group, but it provides a useful set of fax tools bundled with data communications and voice mail capabilities. For those who can make use of these extra capabilities, the program should state a strong value. **Score: Very Good.**

At \$129, DataFax+ is priced comparably with most of the other programs in this comparison, but we found it hard to learn and use and lacking important features. Select DataFax+ only if you want one of its unusual tools, such as its fax transmission statistics and screen grabber. **Score: Satisfactory.**

At \$84.95, Eclipse is significantly less expensive than the other programs in this comparison, except for SoftNet Inc.'s UltraFax 1.1. That's appropriate, because Eclipse is still a step or two behind the industry leaders.

This new version of Eclipse is a nice update that makes the program more competitive. It's not the most powerful fax program, but it does have some special features, such as its Fax Assistant, that will attract some users. **Score: Good.**

**Company:** Cheyenne Software Inc., in Fremont, Calif., can be reached at (510) 490-2928; fax: (510) 490-9490.

**Company:** Trio Information Systems Inc., in Raleigh, N.C., is at (800) 880-4400; fax: (919) 846-4997.

**Company:** Phoenix Technologies Ltd., in Norwood, Mass., is at (800) 452-0120; fax: (617) 551-3750.

**Requirements:** 386 or higher processor, Windows 3.1, 4MB of system memory, fax/modem.

**Requirements:** 286 or higher processor, 2MB of system memory, Windows 3.1, DOS 3.0 or higher, fax/modem.

**Requirements:** 386 or higher processor, 4MB of system memory, Windows 3.1, fax/modem.



**FaxWorks Pro**  
 (Continued)

**UltraFax**  
 (Continued)

**WinFax Pro**  
 (Continued)

**PERFORMANCE: OPTICAL CHARACTER RECOGNITION (OCR)**

FaxWorks Pro's optical character recognition (OCR) routine is reasonably fast and achieved 92 percent accuracy. The program offers nearly all the basic features we looked for in its text-recognition module, though it doesn't provide the extras found in some of the competing products.

Recognized documents can be saved either to a file or to the Clipboard, and the program can launch recognized faxes within an external application when the OCR routine is finished.

You can perform OCR on entire faxes or specified pages and manually specify areas of pages for OCR. Unfortunately, FaxWorks Pro's text-recognition module is not trainable and lacks a spelling checker. **Score: Satisfactory.**

UltraFax's accuracy in OCR was an abysmal 71 percent, although its speed was the second fastest in this comparison.

Like the rest of UltraFax, the program's OCR module handles the basics but fails to provide many extras.

The program can recognize any of 11 languages, and you can choose to save the recognized text to a file or to the Clipboard. Unfortunately, there is no built-in editor, no verifier, and you cannot launch the recognized text into a word processor. UltraFax also lacks the capability to perform OCR on an area of the page that you specify. You cannot save files in any format except ASCII.

**Score: Poor.**

WinFax Pro's OCR is as polished and effective as its other tools. It's the most accurate of the fax software packages; it completed our tests with 94 percent accuracy. Unfortunately, the program is also significantly slower at recognition than some of the competition.

WinFax Pro allows you to save the OCR results to a file, to the clipboard, or to WinFax Pro's OCR editor. The OCR editor allows you to perform a spell check and verify suspect characters. You can also launch the recognized text directly to a word processor.

WinFax Pro supports both manual and automatic selection of zones on the page for OCR. It also allows you to reorder zones and even define the type of data within them. **Score: Very Good.**

**PERFORMANCE: SPEED**

FaxWorks Pro was the fastest program overall, though it turned in slow printing and rotate-and-save times. It was faster at sending a five-page fax with cover page and receiving a two-page fax than any other product in this comparison. **Score: Very Good.**

While UltraFax was the slowest program at sending a cover-page memo and one of the slowest at printing a fax, its performance on other operations was sufficiently sprightly to place the program near the middle of the group in overall speed. **Score: Good.**

WinFax Pro was the fastest program to print a fax and send a cover-page fax. Unfortunately, it lagged behind the other products in sending a five-page fax and receiving a two-page fax. The program's slow speed overall resulted in its reduced score in this category. **Score: Satisfactory.**

**DOCUMENTATION**

FaxWorks Pro's manual is helpful, with clearly written explanations and ample illustrations. Unfortunately, the manual's index is sparse, lacking listings for several of the program's commands. Fortunately, the program's on-line help is more thorough and fills in most of the gaps left by the manual.

There is no on-line tutorial, but we found FaxWorks Pro's cue cards and status messages very useful, especially for novice users.

FaxWorks Pro is also unique for FactsBack, its fax-on-demand information service. **Score: Very Good.**

UltraFax's users' guide is generally well written, though it would benefit from more illustrations and is missing important information. The manual's explanation of the Export utility, for example, failed to mention that the feature is only available from the program's viewer.

The on-line help has similar omissions. The hypertext-linked, searchable help is well written but is a bit too terse and has no illustrations.

UltraFax's icons are easier to understand than those found in most of the competition, but unfortunately, SoftKey didn't follow up with strong on-screen cues. **Score: Satisfactory.**

WinFax Pro is accompanied by three well-written, amply illustrated, and thoroughly indexed hard-copy manuals: a users' guide, a setup guide, and a catalog of WinFax Pro's cover pages. The users' guide offers a solid set of tutorials that we found very helpful.

WinFax Pro's on-line help is also exemplary. Hypertext-linked, searchable, and concisely written, the on-line help even includes an extensive troubleshooting section.

The only noteworthy shortcomings we found in WinFax Pro's documentation were the lack of on-screen icon labels and the lack of a status line. **Score: Very Good.**

**SUPPORT POLICIES**

SoftNet offers a 60-day money-back guarantee for FaxWorks Pro. Unlimited free (but not toll-free) telephone support is available from 9 a.m. to 6 p.m. Eastern time. Support can also be obtained on CompuServe or SoftNet's BBS and FactsBack service. **Score: Very Good.**

SoftKey offers a 30-day money-back guarantee for UltraFax. The company offers unlimited free (but not toll-free) telephone support from 9 a.m. to 8 p.m. Eastern time. Support can also be obtained via CompuServe, the company's own BBS, and a fax-back service. **Score: Very Good.**

Delrina offers a 60-day money-back guarantee for WinFax Pro. The company also provides unlimited free (but not toll-free) telephone support from 9 a.m. to 6 p.m. Eastern time. Support can also be obtained via CompuServe and America Online, as well as via Delrina's BBS and fax-back service. **Score: Very Good.**

**TECHNICAL SUPPORT**

We found SoftNet's technical support staff easy to reach, well informed, and friendly. The only problem we encountered was that on one of our calls a staff person didn't have access to the program on her system. As a result, she had to keep asking questions that made the call significantly longer and more tedious than it should have been. **Score: Satisfactory.**

We had no difficulties reaching SoftKey's technical support staff, though we had to wait through a rather long message before speaking to a staff person. We found staff members to be generally knowledgeable about the product. On two of our calls, we received prompt and accurate answers to our questions. On our third call, however, which had to do with problems getting the scanner working, the staff person was unable to help us and suggested that we talk to the scanner manufacturer. **Score: Satisfactory.**

We were driven nearly to distraction by the lengthy and tedious tape messages we had to work our way through before reaching technical support. But when we finally reached the support staff we found them to be very knowledgeable about the product and eager to help. On one question, which required some research, the staff member called us back rather than making us stay on the line. On all other questions we received immediate and accurate answers. **Score: Good.**

**VALUE**

For the \$129 price of FaxWorks Pro, you can certainly find a fax program with a broader feature set. What makes FaxWorks Pro a strong value is its ease of learning. Thanks to its cue cards, special installation procedures, and overall design, FaxWorks Pro is the easiest fax program we've seen to set up and get working. **Score: Good.**

At \$49.95, UltraFax is clearly the choice of the budget-conscious buyer. The program doesn't offer anything important you can't find in other packages and lacks many of the more powerful features offered by the competition, but you still get strong value for your dollar. **Score: Good.**

With its list price of \$129 and a powerful set of fax tools, WinFax Pro is easily the best overall value in this comparison. It's relatively easy to use, offers a generous collection of cover pages, and its phone book capabilities are the best of the group. **Score: Very Good.**

**Company:** SoftNet Inc., in Marietta, Ga., can be reached at (800) FAXWORK; fax: (404) 984-9956.

**Requirements:** 386 or higher processor, Windows 3.1, 4MB of system memory, fax/modem.

**Company:** SoftKey Inc., in Cambridge, Mass., can be reached at (800) 323-8088; fax: (404) 427-1150.

**Requirements:** 386 or higher processor, 4MB system memory, Windows 3.1, fax/modem.

**Company:** Delrina Corp., in San Jose, Calif., is at (800) 268-6082 or (408) 363-2345; fax: (408) 363-2340.

**Requirements:** 386 or higher processor, Windows 3.1, 4MB of system memory, fax/modem.



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## HOW WE TESTED / from page 62

### The big easy: fax software

structure for locating sent and received faxes and if it made it easy to view, print, and delete faxes. We awarded extra points if the program allowed us to create custom folders for storing faxes. The program also earned a higher score if we could sort logs by various criteria and if an option was available for deleting faxes automatically after a specified period of time.

Optical character recognition: Our tests of a fax program's optical character recognition (OCR) capabilities included speed, accuracy, flexibility, and ease of use. We tested each program's OCR speed on a 33-MHz Gateway 2000 IC, 486 with 8MB of RAM. We measured accuracy by counting the number of errors in a 3,962-character document faxed to each program and run through its OCR routine. We also noted spell-checking tools, verification tools, languages supported, and export formats. Finally, we noted whether the OCR engine was

trainable for better accuracy.

To receive a score of satisfactory, the program had to successfully complete the OCR task and have an error rate of 15 percent or less. In addition, it had to let us save the resulting files in popular Windows word processor formats. To receive a score of good, the program had to have an error rate of 10 percent or less and provide a spelling checker for verifying the job. To receive a score of very good, the program had to fulfill all of the above and provide a built-in text editor with verification tools. Programs received ex-

tra points for recognizing more than one language, for saving the results of OCR in less common file formats, and for the capability to train the OCR facility for specific fonts.

**Speed:** We performed all speed tests on a 33-MHz Gateway 2000 486 with 8MB of RAM, and an Intel Corp. Satisfaction 400 fax modem (with 14.4Kbps fax capability), and a 9.6Kbps plain-paper Hewlett-Packard Co. Fax-90 fax machine. We conducted the print tests on a QMS Inc. 860 PostScript printer.

We tested both operations and printing speed. Each product's speed score was based on its performance relative to the competition.

To test how quickly each product performed faxing operations, we conducted five speed tests. We timed how long it took to send a cover page of a fax (weighted 10 percent); pool and send a five-page fax with a cover page from within Microsoft Corp.'s Word for Windows 6.0 (weighted 20 percent); receive a two-page fax with cover page (weighted 30 percent); rotate a single page of a received fax (weighted 5 percent); and rotate and save a two-page received fax (weighted 10 percent).

To test each fax program's printing speed, we measured the time it took to pool a three-page fax with a cover page (weighted 10 percent) and the time it took to print the three-page fax (including pool time) after we issued the print command (weighted 15 percent).

We ranked each product from 1 to 6 (with 6 being the fastest) by the amount of time it took to complete a particular test. We multiplied each product's rank by the weighting for each test, then added up the weighted rankings to arrive at a final score.

### DOCUMENTATION:

We evaluated the written documentation, on-line help, and other learning aids. To receive a score of satisfactory, the documentation had to be complete and clear enough to lead users through initial setup procedures and basic operations. We awarded bonus points for a quick-start guide, on-line and written tutorials, on-line (context-sensitive or hypertext-linked) help, a quick-reference card, and other useful material. Poor organization, missing information, or an incomplete index lowered the score.

### SUPPORT:

**Support policies:** We gave a satisfactory score for unlimited free support. We added bonus points for support via fax, on-line services (CompuServe, Internet, or a private BBS), a private e-mail, extended hours, a toll-free line, and corporate extended support plans. We subtracted points for limited or no support.

**Technical support:** We based technical support scores on the quality of service we received during multiple anonymous calls to the vendor and on the availability of knowledgeable technicians. We awarded bonus points for extra helpfulness and subtracted points for unreturned calls and long waits on hold.

### VALUE:

Value scores reflect the price vs. the performance and features available in each product tested, taking into account the competition and the intended market.

Jeff Angus provided technical reading on this comparison. Angus is a systems analyst with The Data Works Ltd., a Seattle-based consulting firm.

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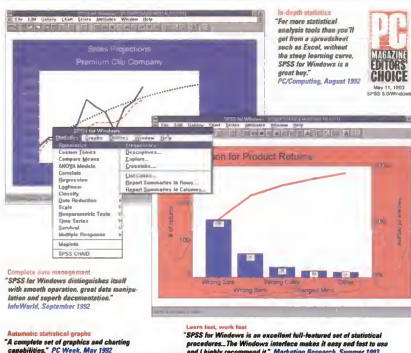
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## REVIEWS

## Pace and price meet in Duracom color notebook

TESTED BY ANNE KALICZAK  
TECHNICAL ANALYST  
WRITTEN BY DUANE MEHTA  
ASSOCIATE REVIEW EDITOR

If you're looking for a fast high-end color notebook, Duracom Computer Systems' TravelPro 5110 offers a blend of power and flexibility with a low price. This is the first notebook we have reviewed with a 100-MHz IntelDX4 processor, and, as we expected, it's faster than any of the 75-MHz machines we tested in our last high-end notebook comparison. (See "Have desktop, will travel," May 23, page 96.)

Some of the TravelPro's other distinctive features include a removable hard drive, a built-in microphone and speaker, a crisp active matrix color screen, and an ergonomic keyboard layout. Its average street price is \$5,027 for an 8MB system with a 200MB hard drive, a floppy drive, an external fax/modem, MS-DOS 6.2, Windows for Workgroups 3.11, and multimedia sound capabilities.

We tested the TravelPro with the same test suite developed for our May 23 high-end notebook comparison.

With its 100-MHz chip, the TravelPro was only about 3 percent faster than Texas Instruments Inc.'s TravelMate 4000E WinDX4-75, the fastest 75-MHz DX4 machine we tested in our high-end notebook comparison. That extra speed won't cost you extra dollars; the TravelPro's street price was about \$700 less than the TravelMate.

The TravelPro's active matrix screen measures 9.5 inches diagonally, has a resolution of 640 by 480 pixels, and includes an integrated VESA Local Bus video adapter. The screen has crisp, clear colors with little bleeding in graphics or text mode. But it's not perfect; in graphics mode the backlighting was more uneven

than in text mode (the screen was a bit darker in the corners). Nevertheless, most of our taste testers rated color reproduction well above average.

Our taste testers also found the keyboard layout nearly ideal. They were a bit put off by the half-size cursor keys (and some taste testers would have preferred a larger Enter key). Otherwise



The Duracom TravelPro 5110 has an Apple-like keyboard design and an active matrix color screen.

they said the keyboard had a solid feel, and our touch typists had no difficulty adjusting to the placement of the Enter, Backspace, and Delete keys.

The Apple-like keyboard design, which pushes the keyboard closer to the screen and leaves a ledge on which to rest your wrist while typing, was comfortable for most of our users. The trackball and mouse buttons are placed in a depressed area in the lower middle portion of the notebook, which prevents you from accidentally hitting the mouse but-

tons when you press the space bar. On the other hand, the keyboard is slightly off center above the trackball, making it more difficult to use the trackball if you're left-handed.

The TravelPro is slightly on the heavy side for a notebook but has average dimensions. It's 2 inches high by 8.6 inches deep by 11 inches wide, and it weighs 7 pounds, 7 ounces with battery and modem. Add a power supply and it is heavier than any of the notebooks we reviewed in our May 23 comparison.

Battery life, at 2 hours, 21 minutes, and 36 seconds, was mediocre. However, the TravelPro's design lets you run two batteries at a time.

Power management on the TravelPro is adequate but relatively inflexible. There are power-saving modes for the CPU, screen, and hard disk. You can configure different settings for the latter two, but not for the CPU.

The TravelPro is otherwise relatively well designed. Ours came with MS-DOS 6.2 and Windows for Workgroups 3.11 pre-installed. The memory and CPU are both easy to reach and upgrade, and the hard drive slides easily out of the side of the case. This design limits you to Duracom hard disks. The battery is located in the front of the case and is equally easy to remove.

Duracom's support policies are relatively generous. The TravelPro comes with a one-year warranty and a 30-day money-back guarantee. Duracom offers toll-free support from 8 a.m. to 7 p.m. Central time on weekdays, as well as an in-house BBS and fax-back support. Although there's no free on-site service, if you send your computer to Duracom, the company will pay all shipping fees and return it to you within 48 hours.

From our anonymous technical support calls, we found that Duracom's

technicians were generally helpful and knowledgeable. We were never put on hold, and on several occasions the technicians explained troubleshooting techniques.

Overall, the Duracom TravelPro 5110 is a good choice for the power user who wants to have a desktop PC on the road. □

## REPORT CARD INFO WORLD

HIGH-END NOTEBOOK COMPUTER

## Duracom TravelPro 5110

Criteria	(Weightings)	Score
<b>Performance</b>		
SYNMARK/Win	(150)	150
First 100-MHz DX4 notebook we've tested.		
Size and weight	(50)	Good (31.25)
7 pounds, 7 ounces with battery and modem.		
Battery life	(125)	Satisfactory (62.50)
2 hours, 21 minutes, 36 seconds; nickel-metal-hydride battery.		
Capacity	(50)	45.00
520MB maximum hard disk; 36MB maximum RAM.		
Screen Quality	(100)	79.43
9.5-inch active matrix color screen provides clear colors with no bleeding; uneven back-lighting.		
Keyboard	(50)	37.86
86 full-size keys; audible click; some keys too close together; trackball only usable if you're right-handed.		
Documentation	(50)	Satisfactory (25.00)
Generic users' guide; useful table of contents; brief description of features; no index, glossary, or troubleshooting section.		
Ease of use	(100)	Very Good (75.00)
ROM-based CMOS setup and power management control; on-line help for setup; all applications pre-installed.		
System design	(100)	92.50
Indicator lights only visible with lid open; memory and CPU are easily upgradeable; trackball inconveniently placed; system accommodates two batteries.		
Support		
Support policies	(50)	Excellent (50.00)
One-year warranty; 30-day money-back guarantee; toll-free line; in-house BBS and fax-back support; extended hours.		
Technical support	(25)	Very Good (18.75)
Never put on hold; technicians were patient and knowledgeable and helped troubleshoot problems.		
Price	(150)	150
Final score		8.1

## PRODUCT SUMMARY

## Duracom TravelPro 5110

**Company:** Duracom Computer Systems, Inc., Irving, Texas; can be reached at (800) 551-9000; fax (214) 518-1090.

**Price:** \$5,027 average street price; \$5,029 list price for our configuration, which includes MS-DOS 6.2, Windows for Workgroups 3.11, multimedia sound utilities by ESS Technology Inc., and an external fax/modem.

**Features:** Intel 100-MHz DX4 CPU; parallel, serial, keyboard, VGA, fax/modem, and docking ports; color active matrix display; built-in microphone and speaker.

**Storage and memory:** 200MB hard drive (520MB available); 1.44MB 3.5-inch floppy drive; 8MB of RAM, expandable to 36MB.

**Pros:** Relatively fast performance; reasonably priced; multimedia features; supports two batteries; generous support policies; helpful technicians.

**Cons:** Mediocre battery life; generic documentation; only a few power management features.

**Summary:** Duracom's TravelPro 5110 is a good choice for the power user who wants the maximum performance available in a notebook.

## BENCHMARKS

## INFO WORLD

## 100-MHz DX4 computers

	Duracom TravelPro 5110	Micron 4100PCI Magnum <sup>1</sup>	Texas Instruments 4000E WinDX4-75 <sup>2</sup>
SYNMARK/Win <sup>3</sup>	164.61	266.69	160.27
<b>SYNMARK/Win application tests<sup>4</sup></b>			
Database	139.03	282.19	146.85
Desktop graphics	203.95	243.72	177.71
Desktop publishing	142.03	256.90	171.02
Desktop presentation	157.75	255.28	134.17
Spreadsheet	157.87	271.42	164.90
Word processing	172.27	267.75	158.52

<sup>1</sup>Micron 4100PCI Magnum was the fastest desktop computer reviewed in our July 18 comparison of clock triplers (page 64).

<sup>2</sup>The TravelMate 4000E WinDX4-75 was the fastest notebook reviewed in our May 23 comparison of high-end notebooks (page 96).

<sup>3</sup>Higher numbers indicate better performance. A computer's SYNMARK rate is relative to a generic 33-MHz 486 Intel BAPCO machine with a reference number of 100. For example, a system with a SYNMARK/Win rate of 50 is 50 percent faster than the reference BAPCO machine.

<sup>4</sup>The categories contribute the following percentages toward the final SYNMARK/Win rate: database (23 percent), desktop graphics (18 percent), desktop presentation (3 percent), desktop publishing (2 percent), spreadsheet (23 percent), and word processing (31 percent).



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- **Dr. Robert M. Metcalfe**, Vice President of Technology, International Data Group; Publisher/CEO, *InfoWorld*; and Inventor of Ethernet — moderator of Track 2: *Building the Information Superhighway.*
- **Stewart Alsop**, Editor in Chief, *InfoWorld*; **Andrew Laursen**, Director, Oracle Media Server Development, Oracle Corp.; **Scott Brader**, Senior Technical Consultant, Harvard University; **Kathie Blankenship**, Director of Switched Data Services, Pacific Bell; **Geoffrey Y. Yang**, General Partner, Institutional Venture Partners; and a host of other experts from the worlds of telephone, cable, and computer networking.

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- How can the Internet be tapped for business or commercial use? What are examples of profitable ventures?
- Will different groups really get access, so that the network is truly universal — open and affordable to all?
- Who will pay for the Information Superhighway? What about traffic fees for usage?
- What lessons are being learned from the California Research and Education Network (CALREN) and the gigabit testbeds?

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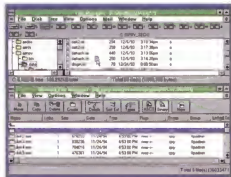
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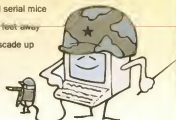
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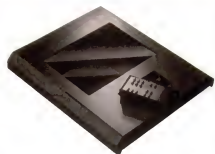
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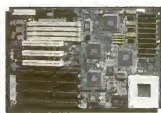
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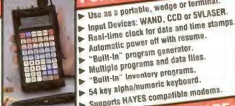
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\*\*\*Demographic Select

## UPCOMING IN INFOWORLD

## AUGUST 29

## PRODUCT COMPARISON

**Intel-alternative desktops.** Intel Corp. isn't the only game in town when it comes to powering your PC. We take a close look at eight systems that use processors from Cyrix Corp., Intel, Advanced Micro Devices Inc., and IBM. The clock speeds of these systems range from 40 MHz to 75 MHz. Our results may cause you to reconsider which factors are really important when making a purchase.

## ENTERPRISE

**Feature:** Looks can be deceiving. Companies considering Unix database servers are finding that on the surface the products are similar, but underneath that veneer, the way they handle operations varies greatly. We focus on the selection processes used at several companies. Maybe one will work for you.

## SEPTEMBER 5

## PRODUCT COMPARISON

**Presentation graphics software.** Creating a presentation has never been simpler or more intuitive. New features in Lotus Development Corp.'s Freelance Graphics for Windows 2.1, Software Publishing Corp.'s Harvard Graphics for Windows 3.0, Microsoft Corp.'s PowerPoint 4.0, and WordPerfect's Presentations 2.0 guide you every step of the way.

## ENTERPRISE

**Feature:** Researchers do it; marketing managers do it; CEOs even do it. It is telecommuting. Government agencies are urging businesses to reduce the number of car trips that employees make. We offer ways for the IS department to respond effectively and systematically to this business and social phenomenon.

InfoWorld is a publication of International Data Group, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. International Data Group publishes more than 200 computer publications in 63 countries. Forty million people read one or more International Data Group publications each month.

## APPWARE / from page 1

## As ship date nears, support wanes

ing to a Powersoft spokesman. Inqury Corp., which initially pledged to use the AppWare Foundation to port its SQL- Windows development environment to other platforms, also decided to jump off the bandwagon.

Graphical development tool vendor Progress Software Corp., in Bedford, Mass., just announced support for App-

Ware at Brainshare in March, but is already wavered. "Not to run on Novell's OLE," said Gary Davis, manager of desktop marketing at Progress.

These decisions stem largely from a lack of integration between AppBuilder and AppWare Foundation.

For instance, Novell cannot

yet say when the applications built in the object-oriented Visual AppBuilder environment will be able to take advantage of AppWare Foundation's cross-platform services.

AppWare Foundation's lack of support for Visual AppBuilder means the existing base of roughly 30 ALMs cannot use AppWare Foundation's cross-platform capabilities.

A promised set of C++ class libraries for AppWare Foundation from Borland International Inc. was due to enter beta testing in July but is late, which will keep many C++ applications from using the AppWare Foundation as well. Novell will throw in, at latest count, 16 third-party ALMs in the Visual AppBuilder box, but only two will run on both Macintosh and Windows (see chart).

Sources close to Novell, however, don't expect the company to provide the upgrade of Visual AppBuilder written for and with the AppWare Foundation until 1995.

In the meantime, AppWare Foundation's shortcomings are being highlighted by competitors such as Microsoft, which is moving its Windows set of APIs—including Win32 and OLE—to Macintosh 680x0 and Digital Equipment Corp.'s Alpha-based platforms via the upcoming Version 2.0 of Visual C++.

AppWare Foundation will also have to compete for the custom application developer's dollar with entrenched cross-platform tools such as Open Interface from Neuron Data Inc., of Palo Alto, Calif., whose package already supports the native GUIs of 35 platforms; and Visix Software Inc., whose Galaxy Application Environment has staked a claim at the high end of cross-platform, mission-critical application development.

"Visual AppBuilder will cost \$495 and AppWare Foundation will cost \$595, Novell said.

Powersoft and companies like them," said one analyst who added that Lotus was also addressing IS concerns by limiting access to Notes design and "IS managers don't like running around fixing Notes macros or supporting every body who decides to create a form," the analyst said.

However, sources stressed that—to most users—Notes would maintain its look and feel.

"This is not a run-time," said David Marshak, vice president at the Patricia Seybold Group in Boston. "Lotus wants you to see it—they want people to have the experience of living in Notes, and they want to increase their presence on the desktop."

## NETWORK / from page 1

## 4.1 aims to fill enterprise gaps

NetWare 4 into beta, marking the first Novell-based, fault-tolerant package for the enterprise network OS.

Users are looking forward to a more flexible directory.

"Right now, if you make a mistake, there's no way to get rid of a server with the current version of NetWare 4," said Dave West, an administrator with Long John Silver Corp., in Lexington, Ky.

"The directory is now more stable, and these other improvements are bound to make users feel more comfortable about rolling [NetWare 4] out," said Jaime Lewis, an analyst with The Burton Group in Salt Lake City.

Lewis said most users and developers have been using NetWare 4 in bindery emulation mode only, citing instability and difficulty in using NDS.

Early beta testers seem excited about the new version. "NetWare 4.1 is the real release of NetWare 4," said one tester. "Without the NetWare 4.1 modifications... we would not be able to think about building huge enterprise directories that will include both LAN and mainframe resources."

Although mainframe-to-LAN directories can be built, higher level integration between the two will have to wait until Progenet Inc. ships file transfer, security, and host-LAN directory synchronization tools. The rollout will start late

this fall and run through early 1995, Progenet officials said.

"We expect the combination of our tools and NetWare 4.1 to finally make the host a real player in a NetWare environment," said Joe Mohen, Progenet's chief technology officer.

NetWare 4.1 integrates a Message Handling Service (MHS)-based directory into NDS so that administrators will have a single directory for both E-mail and NetWare core services such as file, print, and database access. But enterprise management of NetWare 4.1 remains a problem.

"Nothing Novell can ship right now addresses management of NetWare 4.1 environments, but this is not just a Novell problem. It is an industry-wide concern," Lewis said.

Upward compatibility between NetWare 3's bindery and NetWare 4's NDS is also an issue for users. To help, Novell is including NetSync bindery-NDS synchronization software that lets managers administer mixed NetWare 3 and 4 networks with a NetWare 4 utility.

But these improvements may mean NetWare 4.1 is also more server memory. Although server requirements remain the same, at 8MB of RAM, beta testers report the size of the memory default stack for NetWare Loadable Modules (NLMs) has increased from 8KB in NetWare 4.02 to 12KB in NetWare 4.1.

## COMPAQ / from page 1

## Adds PCI to server architecture

president and general manager of Compaq's systems division, said the company wanted to wait until the PCI bus structure was stable.

"There are still a lot of bugs in the chip sets," he said.

Currently, Houston-based Compaq's servers use the EISA bus, which Stimaq says is more stable and continues to offer better sustained bandwidth than PCI.

However, in the long term, PCI will prove more cost effective as PCI networking cards become available and performance improves, he said.

Compaq's TriFlex bus architecture features a passive backplane design and a 128-bit-wide data path. The design allows the bus to work with a number of system bus architectures.

Compaq's Desktop PC line is also going to pick up networking features in 1995, said John Rose, senior vice president and general manager of the company's desktop PC division.

Pieces of the company's network management and application installation capabilities for servers will also migrate to the

Desktop line, minimizing configuration and installation time, Rose said.

Insight Manager will extend the software's remote server management capabilities to the desktop so a network administrator can remotely manage a network of PCs. Some products in the Desktop line will also be configured with Compaq's SmartStart application installation software, Rose said.

Compaq also plans to add its NetFlex 2 adapters, which can support either Token Ring or Ethernet to the Desktop line sometime next year.

Separately, Compaq reduced prices on a number of its existing Desktop systems this week, including its Desktop XL and XE products.

The company reduced prices on the Desktop XL line by 11 percent and on the Desktop XE line by 18 percent.

Prices on the company's ProLinea line were cut 22 percent, and the Contura notebook and Contura Aero sub-notebook received price cuts of as much as 17 percent (see chart).

## What is AppWare?

Novell's ambitious AppWare development environment is composed of two products: Visual AppBuilder and AppWare Foundation. The Visual AppBuilder object-oriented development environment is for constructing object services and applications called AppWare Loadable Modules (ALMs). The AppWare Bus is sold in the same box and allows separate ALMs to be linked together into fully functioning applications.

The AppWare Foundation provides a set of services and an API that allows C programmers to write applications for several operating systems—Windows, Macintosh, UnixWare, SunOS, Solaris, and HP-UX—with one set of source code.

## Third-party ALMs in Visual AppBuilder

Windows compatible

Macintosh compatible

Atchamite Corp. (3270 host access)

Brookhill Software Inc. (accounting)

EXTRA! Terminal

BSI Accounts Payable

EXTRA! Transfer

BSI Accounts Receivable

Host Terminal+Host Destination

BSI General Ledger

Host Roadmap+Host Transfer

BSI Payroll

ImpPower Inc. (imaging)

Parallel Software (network protocols)

ImpPower Viewer

TCPIP

ImpPower Scanner

TCPIP

ClearAccess Corp. (report writing)

Technopools (client/server)

ClearAccess

Sequelink

ClearManager

Chrymos Software Inc. (spreadsheets)

Cystal Services (report writing)

Alert

Cystal Reports

Alert

SOURCE: NOVELL INC.

## NOTES / from page 1

## 'Lite' version to be less filling

Notes to try it, existing customers may be out of luck. According to sources briefed by Lotus, Notes Express will not be able to view files created in the full-featured version. Instead, users will get access only to five templates that will ship with the product and to custom applications written to the Notes API.

Lotus will include limited macro capability in Notes Express, said the sources, but will disable the design features of the full-featured client. Users will be able to change their views of databases, but not add new fields or forms. Notes Express should not be

confused with the next-generation cc:Mail client that will access both Notes Mail and cc:Mail post offices and provide views of Notes databases. That product, under development, is slated to ship next year with Lotus Communication Server, also known as Notes 4.0.

Lotus will play up Notes Express as a way for third-party developers to get access to Notes data without circumventing Notes' security features. Currently, corporate customers must install the \$495 Notes client to use custom applications, giving many users a range of options. "This will be a big boost to

Notes and companies like them," said one analyst who added that Lotus was also addressing IS concerns by limiting access to Notes design and "IS managers don't like running around fixing Notes macros or supporting every body who decides to create a form," the analyst said.

However, sources stressed that—to most users—Notes would maintain its look and feel.

"This is not a run-time," said David Marshak, vice president at the Patricia Seybold Group in Boston. "Lotus wants you to see it—they want people to have the experience of living in Notes, and they want to increase their presence on the desktop."

# Banking on a GUI.



**Who:** Richard Hebda

**Title:** Vice President,  
cash management systems

**Business:** First National Bank  
of Chicago, the nation's eleventh  
largest bank.

**Challenge:** "Today, financial  
products are commodities."

**Goal:** "In banking, the way to  
attract and keep business is to  
emphasize service and make it  
easier for customers to access and  
use products."

**Solution:** "We developed a  
client/server system called First-  
Window 2000. It's based on  
Microsoft Windows. We also used:

- Paradox, Borland's relational  
database management system
- Actor Professional, Symantec's  
development language
- InstallShield for Windows from  
The Stirling Group

With FirstWindow, we integrated 11  
different customer payment systems  
and gave our customers direct access  
to account data."

**Results:** "Phenomenal. We attracted  
more new customers in the first two  
months of FirstWindow's  
introduction than in the entire  
previous year."

**Favorite newspaper:** "InfoWorld  
is one of the best sources around.  
It keeps us abreast of what's  
happening and provides more  
pragmatic uses of technology than  
any other publication in its  
category."

**INFO  
WORLD**



## REVIEWS / TEST DRIVES

DISTRIBUTED DATABASE PUBLISHER

## Folio Views' focus shifts to infobase distribution

By Patrick Marshall  
Contributing Editor

Folio Views, originally a DOS-based text-retrieval program, has been struggling to redefine itself. When Folio Corp. came out with a Windows version more than a year ago, it was positioned as a "personal electronic publisher." But the problem was that not many users wanted to spend the time required to generate personal electronic publications.

A more natural market for the program is corporate publishing and commercial publishing of distributed databases, which is the niche that Folio has targeted with its recent release

of a range of Folio Views 3.1 products.

At the low end of the series is the \$295 Views Infobase Manager, which lets users search, edit, annotate, and print Views infobases. You can also use the Infobase Manager to import ASCII files.

Next up on the scale is the Views Infobase Production Kit (IPK), which is the product I took for a test drive. With a list price of \$895, the Infobase Production Kit includes the full Infobase Manager and a set of advanced utilities for creating infobases for distribution.

The Search and Replace utility, for example, allows you to prepare files for processing into

infobases.

The Flat File Validator ensures that your file is structured properly and that all links are appropriately specified. The Create utility brings the prepared files into Views.

At the top of the Views series is the Professional Infobase Development Kit, which lists for \$3,995. Targeted at commercial publishers and corporations, the development kit includes all of the above plus tools for infobase distributors, such as utilities for creating custom installation routines, combining infobases, and assigning access rights to users.

The product in this series that is closest to Views 3.0 is the IPK. Like Views 3.0, the Views

3.1 IPK brings the program's powerful indexing and searching tools to bear on a wide variety of text file formats.

You can create hypertext links, attach images to records, and compress the whole database to about 50 percent of the space required by the original files.

Aside from the tools in Views 3.0, there are several important enhancements. Infobase authors can now create Query Templates to modify Views' powerful search interface. Using Query Templates, you can customize the Query display to offer custom fields for the searches that are most appropriate to the infobase in question. For a

collection of articles, for example, you might insert a search-entry field for Author.

In addition, Views 3.1 IPK includes better updating of Views "shadow" files, which contain local information in a transparent overlay to a Views database.

Also welcome is a new user interface for the Create utility that replaces the old, awkward-to-use command-line interface. Unexpectedly, as Views grows more powerful and more diversified, it's also getting easier to use, thanks to better adaptation to the Windows environment and intelligent design of the user interface.

Folio is in Provo, Utah, at (801) 344-3700.

## FIRST LOOK / From page 1

## IBM cleans up LAN Server's act

Ring cards by the time 4.0 ships.

IBM takes an even stronger graphical approach to LAN administration than you'll find in the easy-to-administer Windows NT Advanced Server. There are a few notable kinks in the way the administration tools work, but they are otherwise so well crafted that they threaten to ruin IBM's reputation for creating inscrutable software that seems purposely designed to remain aloof from its users.

The new tools are so easy to master, in fact, that I was able to install OS/2.11 and LAN Server, configure modems, printers, applications, and disk resources, and also make them available to various groups and users, all in a leisurely afternoon. With the older version of LAN Server, it took that long just to figure out where to start reading the manuals.

The primary reason it was so easy to configure my installation of LAN Server is that the GUI tools are a logical extension of the object-oriented OS/2 Workplace Shell. You create a group, user, or resource (such as a disk directory, application, modem, or printer), by tearing off, dragging, and dropping a template for the object you want to create.

If you want to grant a user access to a directory on your server, you drag the resource object for that directory to the icon for that user. To make it available to a group of users, you drag the object to the group. Set the access rights, let LAN Server whet your appetite, and you're done.

You can use the administration tools to define resource objects from any server within or across domains and use the drag-and-drop features to make them available to users. The beauty of this is that you can physically relocate directory resources, applications, and physical devices without your users ever having to

know that the configuration has changed. This degree of insulation from the server isn't new to LAN Server, but the sophistication of the administration tools make the process more accessible.

LAN Server provides other methods besides the GUI tools for managing resources. OS/2 Workplace Shell objects, such as files and directories, all have menus that you can activate by clicking the right mouse button on the object. LAN Server adds selections to these menus that make it possible to directly administer any shareable resource you can get to from the desktop.

You can still manage resources at the command line, too, and automate lengthy and complex tasks with a Rexx script and LAN Server 32-bit API calls. This last method is useful in very large installations where a GUI approach to network management would simply bog down the administrator.

**FOLLOWING PROTOCOL.** You can now use TCP/IP as your native LAN Server protocol (more specifically, NetBIOS over TCP/IP). The TCP/IP support is noticeably faster. IBM claims to have achieved a 200 percent improvement with that pro-

toocol. It also claims that NetBIOS over TCP/IP runs within 30 percent of NetBEUI/NetBIOS performance. LAN Server 4.0 includes a GUI tuning tool. You describe your network configuration by filling out a settings notebook, and the tool makes recommendations on how you can run your system faster.

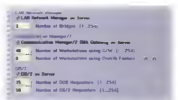
Other performance claims include Pentium exploitation and a 28 percent improvement in DOS/Windows client performance, with a protected-mode redirector that releases more memory to DOS (about 600KB in a NetBIOS client). IBM claims that LAN Server 4.0 will run on one processor as fast as Windows NT will run on four, all other things being equal.

Nevertheless, LAN Server 4.0 supports the new symmetric multiprocessing (SMP) version of OS/2, which adds some scalability to the product, particularly if you're using CPU-intensive client/server applications such as Lotus Development Corp.'s Notes or a database server. We'll put it through the wringer when we have a shipping product and let you know.

Judging from the feature set, IBM is stepping up its efforts to make LAN Server coexist with or replace as many existing network operating systems as possible. IBM will make freely available — on its BBS and by anonymous File Transfer Protocol (FTP) — a utility that migrates users, groups, log-on assignments, and files from a NetWare 2.2, 3.11, or 3.12 server to LAN Server 3.0 or 4.0.

## New feature highlights

- Easy installation
- Expanded network adapter support
- Peer-to-peer capability
- Object-oriented GUI administration tools
- Intuitive back-end management tools
- NetBIOS over TCP/IP native support
- Pentium optimization
- OS/2 SMP support
- Easy performance tuning
- Expanded interoperability



The LAN Server tuning utility will make recommendations on how to improve the performance of your network.

LAN Server clients can easily connect to and use resources on Windows NT Advanced Server, and NT and Windows for Workgroup clients can access LAN Server as well. Just as in prior versions, the LAN Server OS/2 client coexists nicely with NetWare requester and Network File Service (NFS).

For mixed platforms such as these, IBM plans to include a utility called the Network Signon Coordinator. It lets you log on just once, and it will connect you to whatever mix of LAN operating systems you have on the network. It will also let you synchronize your password across multiple LAN Server domains.

It is apparent that IBM has been the writing on the wall, and it says "Windows NT Advanced Server." The expression "writing on the wall," by the way, comes from the biblical Daniel, who interpreted God's graffiti to mean King Belshazzar's days were numbered. By "numbered" he evidently meant one binary digit — the ill-fated king was slain that night.

Fortunately for IBM, there is more time and opportunity to change the fate of LAN Server. And from the looks of this LAN Server 4.0 beta, it seems IBM is using the time to rise to the challenge.

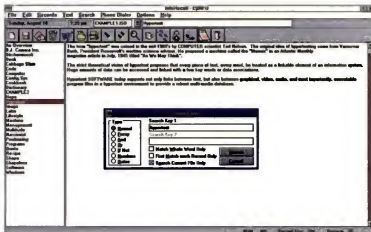
IBM is predicting an October ship date, but we found just enough bugs and missing features that we wouldn't be surprised if it shipped at year's end. Pricing has not been set.

IBM, in Austin, Texas, can be reached at (512) 838-7880.

Nicholas Pitruck is executive editor of Reviews & Testing.



## WINDOWS PIM



InfoRecall offers a concise display of your text data and provides powerful search tools to make it easy to access.

## InfoRecall poised to rival rest of Windows PIM pack

BY PATRICK MARSHALL  
CONTRIBUTING EDITOR

Because Phantech Software Inc. has tagged brand-new InfoRecall with a version number of 4.0, cynics might suspect that the company is trying to lend the product the patina of maturity. But Phantech explains that it used up the earlier numbers on shareware versions and is shipping the first commercial version as 4.0 so that shareware customers are not confused.

In any event, InfoRecall is a recent entrant in the Windows information organizer race. Judging from the beta software I tested, it has a good chance of winning that race.

InfoRecall's interface is straightforward and easy to understand. The names of individual records in a database are displayed in a column along the left side. The full text of records that are highlighted, which can be as many as 25 pages long, is shown in the main display box.

Creating new records is a snap. You can import external word processor files as records or create new ones manually at the keyboard. And InfoRecall lets you create hypertext links between words in one record and other records so that you can jump from one to the other with the click of a mouse.

The system works great for all kinds of data, from random notes to contact information. The program even includes a template for entering name, address, and phone number records, although InfoRecall doesn't yet offer a template editor to let you create your own templates. InfoRecall's built-in dialer and phone log also make the program an effective tool for tracking contacts.

The program's search tools are flexible

and easy to use. Click on the flashlight symbol in the toolbar and InfoRecall offers a dialog box where you can enter up to two search terms. You can also specify whether the program should perform an exact or a fuzzy search and, if you're searching for more than a single term, which Boolean operators (AND, OR, NOT, and so on) you want to employ to narrow or broaden your search.

You can also search for dates and number ranges. For example, if you have a database of customers and want to retrieve records of all those who purchased more than \$10,000 of goods, you can simply enter a search for all numbers greater than 10,000. Sure, you might get a few spurious hits on customers who

happen to have more than 10,000 of something else, but it's a quick and easy way to keep and manage the data without learning how to program Borland International's dBase or Paradox.

You can search within a record, across records, and even across databases within the application. InfoRecall returns the file name, record name, and the line from the record that contains the first hit. Select the one you want, double-click, and InfoRecall will zip you to the full record.

InfoRecall supports DDE links to selected Windows word processors: Word for Windows, WordPerfect for Windows, Lotus Development Corp.'s Ami Pro, Windows Write, and Notepad. You can use the links to send text from your InfoRecall databases to those formats, but unfortunately the links don't work the other way.

InfoRecall lists for \$99.95.

Phantech Software is headquartered in Toronto, and can be reached at (800) 208-1311.

## SQL DATABASE FRONT END

## Omnis 7's graphing features make form creation a breeze

BY MIKE MALTO  
REVIEW BOARD

Blyth Software Inc. has upgraded its Omnis 7 SQL front end, adding features and making old ones more powerful. Version 3.0 comes with a spruced-up interface in addition to the nuts-and-bolts improvements.

Some of Omnis 7's competitors already have the sculpted look of modern windowed applications, but it's a welcome addition to this grizzled veteran. Blyth bundles Omnis 7 for both Windows and Macintosh in one package.

The interactive graph module has the most notable improvements and is a major leap forward for graphics programmers who use Omnis 7.

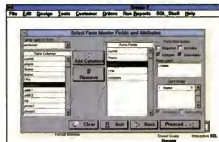
The code necessary to invoke a graph is very small and uncomplicated, and the program offers a wide scope of graphing and charting features.

To assist in creating graphs, Omnis 7 provides an easily modified sample graphing program in one of the included libraries. With it, you can read in your data and produce graphs right away.

Blyth has also beefed up Omnis 7's back-end tools, making them much more intuitive. The log-in definition manager has a new look, and in the event of an error, it provides users with an error message and returns gracefully rather than throwing users into the debugger. The SQL object browser provides features that allow you to manage the back-end database.

New in this release is the SQL Form Builder prototyping tool. It is template driven, which means you can create different forms without writing any code—just follow the prompts in the template.

You can include a complete set of fully functional action buttons and a query-by-example control, which finished forms that are usable as is. You can also modify



The SQL Form Builder lets you select the master table, the fields you wish to use, and other attributes for your form.

forms at the window or code level to increase functionality.

Version 3.0 provides the commands needed to communicate with Lotus Development Corp.'s Notes API. This allows Windows users to access Lotus forms through an Omnis 7 application. There isn't a Lotus Notes API for the Macintosh, so no commands are provided

for this platform.

Omnis 7 now comes with an additional set of database control commands that gives programmers finer control over data flow.

For example, the additional commands provide functions to move a cursor back and forth over a select table if the back-end database supports cursors and their movements.

Other expanded features include the Omnis 7 version control system and

change management system. These new support Oracle 7 so that the version control system and change management system repositories can be stored on Oracle. This feature is significant to Oracle 7 developers because of Omnis 7's new runtime policy. Free, unlimited use of the runtime version comes with Omnis 7 for those applications that do not access the Omnis 7 database, so Oracle 7 developers don't have to purchase additional runtime licenses.

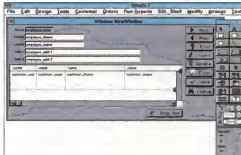
Overall, I found the added features very useful and the improved features a significant plus. The more up-to-date interface adds a nice touch to what has become a solid program.

Omnis 7, Version 3.0 lists for \$5,000 and includes both the Windows and Macintosh versions.

Blyth Software is located in Foster City, Calif., at (800) 346-6647.

### New feature highlights

- Improved interface
- Bundled Windows and Macintosh versions
- Easy graph creation
- Wide range of graphing and charting features
- Intuitive back-end management tools
- Prototyping tool for creating forms without writing code
- Commands for communicating with Windows Lotus Notes API
- Additional database control commands
- Version control and change management systems support Oracle 7
- Free and unlimited use of run-time version for those applications that do not access the Omnis 7 database



SQL Form Builder's form-creation toolbar helps create fully functional forms, including action icons.

## Distributed Thinking / Stewart Alsop

## IBM's out-of-sync perception is behind its market slide

IBM is No. 3 in personal computers in the United States. (Congratulations to Compaq on being No. 1! I, for one, can't believe how wrong I was a couple of years ago, and I've had to change my view of the world to understand how Compaq pulled off its move from three to one.) Quite frankly, I'm having a hard time believing that IBM's slide will stop there — is there any chance that IBM could sell fewer computers in some upcoming quarter than Packard Bell? (Perhaps the Christmas quarter, which plays to Packard Bell's distribution in mass merchant stores.)

The company's ThinkPad line is still a pretty cool set of products and is relatively hot compared to the rest of the notebook business. But what else does IBM have to recommend it? The PC division reports to a guy with no background in computers, much less personal ones; it is eliminating product lines and moving the main operations of the division to a different state. It looks like it's shuffling pieces around on a strategic chessboard without any idea of what it's trying to accomplish.

A recent decision IBM made is just one example: It made its new (unannounced and undemonstrated) PowerPC-based computers part of the latest PC product line. Now there will be regular ThinkPads and PowerPC ThinkPads sitting side by side. It will be up to the customer to figure out the difference between the ThinkPad 950C (Pentium) and the ThinkPad 9150C (PowerPC). (I made these model numbers up, by the way, just to illustrate the point.) I don't think any normal human being could predict IBM's product numbering program, which appears to be

based on a random-number generator.)

The decision was probably based on Apple's success with the Power Macintosh. Someone at IBM said, "Look, Apple has introduced the PowerPC as an extension of its existing line. Why don't we?" And nobody replied that PowerPC isn't an extension of Apple's existing product line. Apple is actually trying to replace all of the 68000-based models in its product line and seems to feel that it will succeed in about two to three years. If IBM is trying to replace \$9-plus billion of business with a new microprocessor that won't run the operating system that ships with 90 percent of the machines it sells, it has really gotten stupid.

My colleague, David Coursey, editor of *P.C. Letter* (an InfoWorld product; call [800] 432-2478 for a sample issue), wrote last week that IBM should get out of the operating system business. "IBM's self-perception is still wildly out of sync with outsider perception," Coursey wrote. "Out there, nobody much cares what IBM is doing and people aren't willing to bet their jobs on its success. I do not know a single person who believes IBM can create any significant, new, IBM-driven standards in the foreseeable future. Yet IBM seems not to be aware of this and plunges ahead anyway."

This is precisely the problem. IBM continues to act in a completely self-referential way. It's easy to drop product lines, lay off people, and consolidate operations. It's not easy to make product decisions about microprocessors and operating systems. Given IBM's inability to work out a strategy for the benefit of customers, I don't see how IBM is going to reverse its market-share slide



the near future.

#### WHO YOU GONNA CALL?

I got several comments from readers who think that I should have called for Steve Jobs' return to Apple, rather than John Sculley's. (See "Macworld Expo proves Apple should bring back Sculley," August 8, page 98.) The thought had crossed my mind, to be honest. But I decided it was too unrealistic that even I shouldn't try that one out.

But I keep thinking about it. There are three questions to be answered.

First, would Jobs want to become chairman of Apple Computer again? Personally, I suspect he would but would never actually admit it. In fact, the only way he would take the job is if Apple — voluntarily and enthusiastically — paid him too much money for Next Computer Inc. as penance for mistreating him the first time around.

Second, would Apple Computer want to have Jobs back again? I doubt it. I think Jobs would be a threat to the pro-

ple who run Apple because he is clearly a guy with vision and personality. What would he do if he was at Apple? Dump Taigert, for sure. Finally bury HyperCard. Maybe shoot Newton and eWorld in the head. He'd make trouble, for sure. But Apple's current management thinks it can increase market share in the next few years. And if Apple doesn't know it's got a problem, then it certainly isn't going to make trouble for itself.

Third, would bringing Jobs back to Apple give the company a better shot at continued success, which means growing as fast or faster than the marketplace for personal computers? Could be. The first thing Jobs would do is to marry the PowerPC architecture with OpenStep and make the Next operating system the strategic platform for Apple to go forward. This would not be easy, because he would have to find a way to marry the two operating systems. But it is possible — Next has already ported OpenStep to other RISC architectures and it started on the 68000, where the Macintosh has been, and Apple has already rewritten large portions of the Macintosh OS to run on PowerPC. This would not only preserve customers' investment in the Macintosh software, but also provide both corporate customers and ISVs with a new, object-oriented development environment as a platform for developing new kinds of software.

It's a crazy thought, but it's precisely the kind of absurd idea that might make it possible for Apple to survive and go forward as an independent company.

Editor in chief Stewart Alsop welcomes comments and may be reached on the Internet at [stewart\\_alsop@infoworld.com](mailto:stewart_alsop@infoworld.com).

#### Notes From the Field / Max Terwilliker, Son o' Gringely

## Woodstock '94 chant: '1-2-3-4, we don't want a tech-compression war'

My generation is screwed. This isn't one of those Generation X cry-baby stories about baby boomers taking all the jobs and laying us off for being slackers.

This is about Woodstock '94 and how it affected my lawyer friend, Daniel, a geezer approaching 40, and me, a brat in his mid-20-somethings.

"I missed the first one because I was only 12, and my older brother got to go," Daniel said. "I got to go this year and hear Bob Dylan."

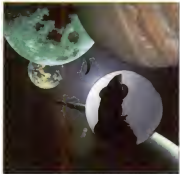
My reaction? His generation had events worthy of remembering 25 years down the line — the moon landing, Woodstock. What events do we have?

"I can see it now," Daniel smirked. "People sitting around TVs watching the 25th anniversary of O.J.'s 30-mph failed flight to freedom."

Ugh.

**QUANTUM LEAP.** One worthy event in the software industry was the development of a new compression technology code-named Quantum. It has been licensed by Microsoft and Borland on a nonexclusive basis, and performs up to 30 percent better than PKZip.

The beta of Chicago uses Quantum to



compress files onto disks and CD-ROMs, and Borland has already shipped it as part of the new SideKick.

**PSYCHEDELIC CYRIX.** As usual, a chat with Daniel disintegrates into a heated *People's Court* debate:

Prosecutor Terwilliker: "Do you believe that the events of August 15 to 17, 1969, with stoned hippies exhorting peace and love but destroying a beautiful fair, deserve an exalted status?"

Defender Abramowitz: "This was a defining moment for the youth move-

ment, rock music, outdoor festivals, and free love."

I think he's been sampling the brown acid again.

And who's been sampling the Cyrix chips? A friend of mine at a certain ComPAU tech department says that he has been keeping a database of Cyrix chip failures over the past 12 months. The failure rate was three out of five, with a sample of more than 1,000 machines. Problems included machines not booting and constantly locking up. This failure rate is pretty extreme and might be a widespread problem.

Widespread also describes the distance between Apple's position and reality in the video market. The company claims that QuickTime for Windows is in the public domain, but a search of the Internet failed to turn it up. If it is serious about the market, then why isn't the software publicly available? There is also word that Cupertino is going to charge for QuickTime 2.0 for the Mac.

**WOODSTOCK IN VEGAS?** So Max, aren't you even slightly jealous of me for going to Woodstock '94? Daniel asked.

Let's see, there were electrical storms, acres of mud, endless traffic, a ban on

beer, not enough bathrooms, and free-loading yuppies.

Minus the beer ban, it sounds a lot like last year's Comdex. There was a nightmarish situation for the press, who had to work out of a "press tent" that had no air conditioning or bathrooms. Now, the Interface Group's head of PR and her assistant have quit, and guess what? There's going to be another press tent this year. Sure, the press will be there, but many would have better luck playing the slots than getting work done.

Daniel doesn't think that *InfoWorld's* readership can even relate to something as countercultural as Woodstock.

"Geez, how can you write for that mag? I mean, the CEO Bob Metcalfe wrote a column about how he never tripped on LSD in the '60s because he was so square."

Wow, he might have invented Finalnet instead of Ethernet.

My groovy dad, Bob Gringely, is on vacation writing his opus, *How I Tuned In, Dropped Out, and Tuned Pammy On*. Call in the time: (415) 312-1234; fax: (415) 358-1269; or [cringe@infoworld.com](mailto:cringe@infoworld.com). Far out.

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